



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

February 11, 2013

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

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Attn: Lisa Perenchio

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EPA, REGION 5

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for January 2013

During the month of January, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 31 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 26 days this month.
- Cavity KCI 1060 was in operation for 31 days this month.
- Cavity KCI 2030 was in operation for 31 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 31 days this month.
- Cavity KCI 2062 was not in operation for this month.

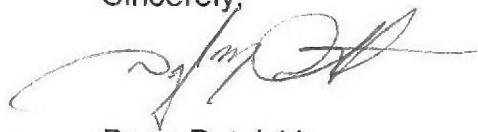
Workover records are sent under separate cover by Doug Patulski,  
Production/Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:


1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Production/Minefield Superintendent



Karl Tomaszewski  
Site Manager

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CAVITY 1010

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	shut in	shut in	shut in
2-Jan-13	shut in	shut in	shut in
3-Jan-13	shut in	shut in	shut in
4-Jan-13	shut in	shut in	shut in
5-Jan-13	shut in	shut in	shut in
6-Jan-13	shut in	shut in	shut in
7-Jan-13	shut in	shut in	shut in
8-Jan-13	shut in	shut in	shut in
9-Jan-13	shut in	shut in	shut in
10-Jan-13	shut in	shut in	shut in
11-Jan-13	shut in	shut in	shut in
12-Jan-13	shut in	shut in	shut in
13-Jan-13	shut in	shut in	shut in
14-Jan-13	shut in	shut in	shut in
15-Jan-13	shut in	shut in	shut in
16-Jan-13	shut in	shut in	shut in
17-Jan-13	shut in	shut in	shut in
18-Jan-13	shut in	shut in	shut in
19-Jan-13	shut in	shut in	shut in
20-Jan-13	shut in	shut in	shut in
21-Jan-13	shut in	shut in	shut in
22-Jan-13	shut in	shut in	shut in
23-Jan-13	shut in	shut in	shut in
24-Jan-13	shut in	shut in	shut in
25-Jan-13	shut in	shut in	shut in
26-Jan-13	shut in	shut in	shut in
27-Jan-13	shut in	shut in	shut in
28-Jan-13	shut in	shut in	shut in
29-Jan-13	shut in	shut in	shut in
30-Jan-13	shut in	shut in	shut in
31-Jan-13	shut in	shut in	shut in

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CAVITY 1020

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	1080	103	116
2-Jan-13	1050	109	133
3-Jan-13	1040	116	131
4-Jan-13	1042	112	122
5-Jan-13	1048	116	124
6-Jan-13	1079	101	109
7-Jan-13	1014	152	201
8-Jan-13	970	165	173
9-Jan-13	983	142	145
10-Jan-13	985	145	175
11-Jan-13	981	167	208
12-Jan-13	1002	164	150
13-Jan-13	1051	142	138
14-Jan-13	1059	119	132
15-Jan-13	1037	122	128
16-Jan-13	1029	122	133
17-Jan-13	994	105	155
18-Jan-13	977	122	139
19-Jan-13	990	123	134
20-Jan-13	995	104	117
21-Jan-13	995	118	120
22-Jan-13	998	128	130
23-Jan-13	1015	115	74
24-Jan-13	1023	121	150
25-Jan-13	1009	125	148
26-Jan-13	1003	130	149
27-Jan-13	1006	127	147
28-Jan-13	1000	127	142
29-Jan-13	965	149	153
30-Jan-13	966	136	154
31-Jan-13	963	140	158

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Cavity 1020

Jan-13  
Monthly Averages

Injection Pressure (psi)  
1011

Injection Flow (gpm)  
128

Return Flow (gpm)  
142

Maximum Injection Pressure and corresponding Injection Flow

Date  
1-Jan-13

Injection Pressure (psi)  
1080

Injection Flow (gpm)  
103

Minimum Injection Pressure and corresponding Injection Flow

Date  
31-Jan-13

Injection Pressure (psi)  
963

Injection Flow (gpm)  
140

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
11-Jan-13

Injection Flow (gpm)  
167

Injection Pressure (psi)  
981

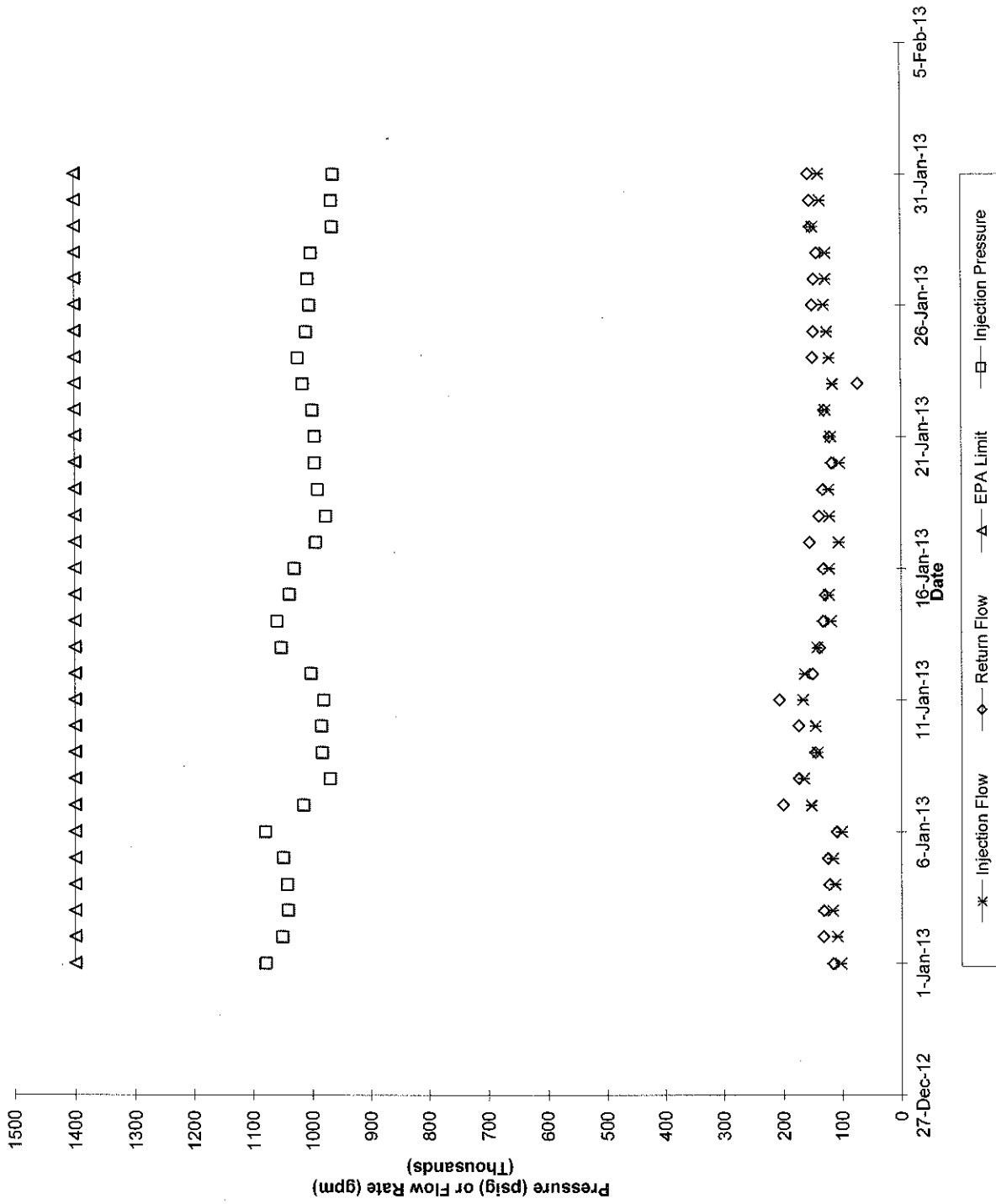
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	shut in	shut in	shut in
2-Jan-13	shut in	shut in	shut in
3-Jan-13	shut in	shut in	shut in
4-Jan-13	shut in	shut in	shut in
5-Jan-13	shut in	shut in	shut in
6-Jan-13	shut in	shut in	shut in
7-Jan-13	shut in	shut in	shut in
8-Jan-13	shut in	shut in	shut in
9-Jan-13	shut in	shut in	shut in
10-Jan-13	shut in	shut in	shut in
11-Jan-13	shut in	shut in	shut in
12-Jan-13	shut in	shut in	shut in
13-Jan-13	shut in	shut in	shut in
14-Jan-13	shut in	shut in	shut in
15-Jan-13	shut in	shut in	shut in
16-Jan-13	shut in	shut in	shut in
17-Jan-13	shut in	shut in	shut in
18-Jan-13	shut in	shut in	shut in
19-Jan-13	shut in	shut in	shut in
20-Jan-13	shut in	shut in	shut in
21-Jan-13	shut in	shut in	shut in
22-Jan-13	shut in	shut in	shut in
23-Jan-13	shut in	shut in	shut in
24-Jan-13	shut in	shut in	shut in
25-Jan-13	shut in	shut in	shut in
26-Jan-13	shut in	shut in	shut in
27-Jan-13	shut in	shut in	shut in
28-Jan-13	shut in	shut in	shut in
29-Jan-13	shut in	shut in	shut in
30-Jan-13	shut in	shut in	shut in
31-Jan-13	shut in	shut in	shut in

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	1118	125	125
2-Jan-13	1175	101	101
3-Jan-13	1167	113	113
4-Jan-13	1145	132	132
5-Jan-13	1105	117	117
6-Jan-13	1150	117	117
7-Jan-13	shut in	shut in	shut in
8-Jan-13	shut in	shut in	shut in
9-Jan-13	shut in	shut in	shut in
10-Jan-13	shut in	shut in	shut in
11-Jan-13	shut in	shut in	shut in
12-Jan-13	1183	114	114
13-Jan-13	1145	113	113
14-Jan-13	1133	110	110
15-Jan-13	1193	116	116
16-Jan-13	1175	124	124
17-Jan-13	1183	120	120
18-Jan-13	1200	114	114
19-Jan-13	1170	114	114
20-Jan-13	1183	103	103
21-Jan-13	1150	132	132
22-Jan-13	1125	106	106
23-Jan-13	1145	106	106
24-Jan-13	1195	106	106
25-Jan-13	1200	91	91
26-Jan-13	1167	115	115
27-Jan-13	1200	105	105
28-Jan-13	1200	103	103
29-Jan-13	1167	112	112
30-Jan-13	1250	106	106
31-Jan-13	1175	106	106

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Cavity 1050

Jan-13  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1169	112	112

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Jan-13	1250	106

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
5-Jan-13	1105	117

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
4-Jan-13	132	1145

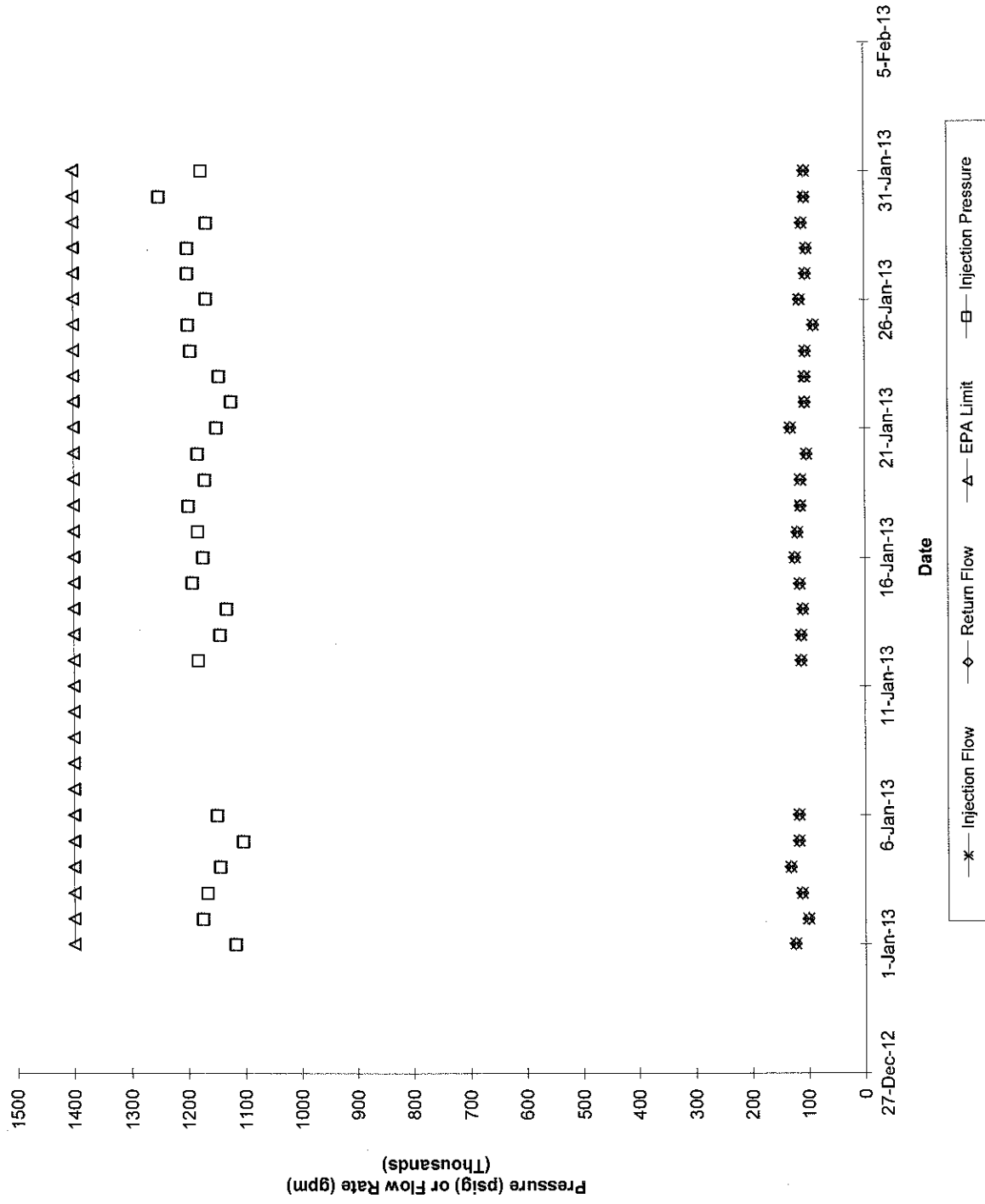
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# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates





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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	✓ 1080	278	281
2-Jan-13	1050	271	273
3-Jan-13	1040	271	276
4-Jan-13	1042	264	270
5-Jan-13	1048	278	283
6-Jan-13	1079	264	265
7-Jan-13	1014	271	261
8-Jan-13	970	257	249
9-Jan-13	983	285	273
10-Jan-13	985	✓ 299	276
11-Jan-13	981	278	246
12-Jan-13	1002	243	242
13-Jan-13	1051	243	246
14-Jan-13	1059	250	240
15-Jan-13	1037	264	229
16-Jan-13	1029	243	239
17-Jan-13	994	250	266
18-Jan-13	978	250	264
19-Jan-13	990	264	262
20-Jan-13	995	222	228
21-Jan-13	994	250	275
22-Jan-13	998	257	239
23-Jan-13	1015	236	256
24-Jan-13	1023	243	252
25-Jan-13	1009	243	243
26-Jan-13	1003	236	248
27-Jan-13	1006	243	236
28-Jan-13	1000	236	242
29-Jan-13	965	250	219
30-Jan-13	966	250	252
31-Jan-13	963	257	261

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Cavity 1060

Jan-13  
Monthly Averages

Injection Pressure  
1011

Injection Flow  
256

Return Flow  
255

Maximum Injection Pressure and corresponding Injection Flow

Date  
1-Jan-13

Injection Pressure  
1080

Injection Flow  
278

Minimum Injection Pressure and corresponding Injection Flow

Date  
31-Jan-13

Injection Pressure  
963

Injection Flow  
257

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
10-Jan-13

Injection Flow  
299

Injection Pressure  
985

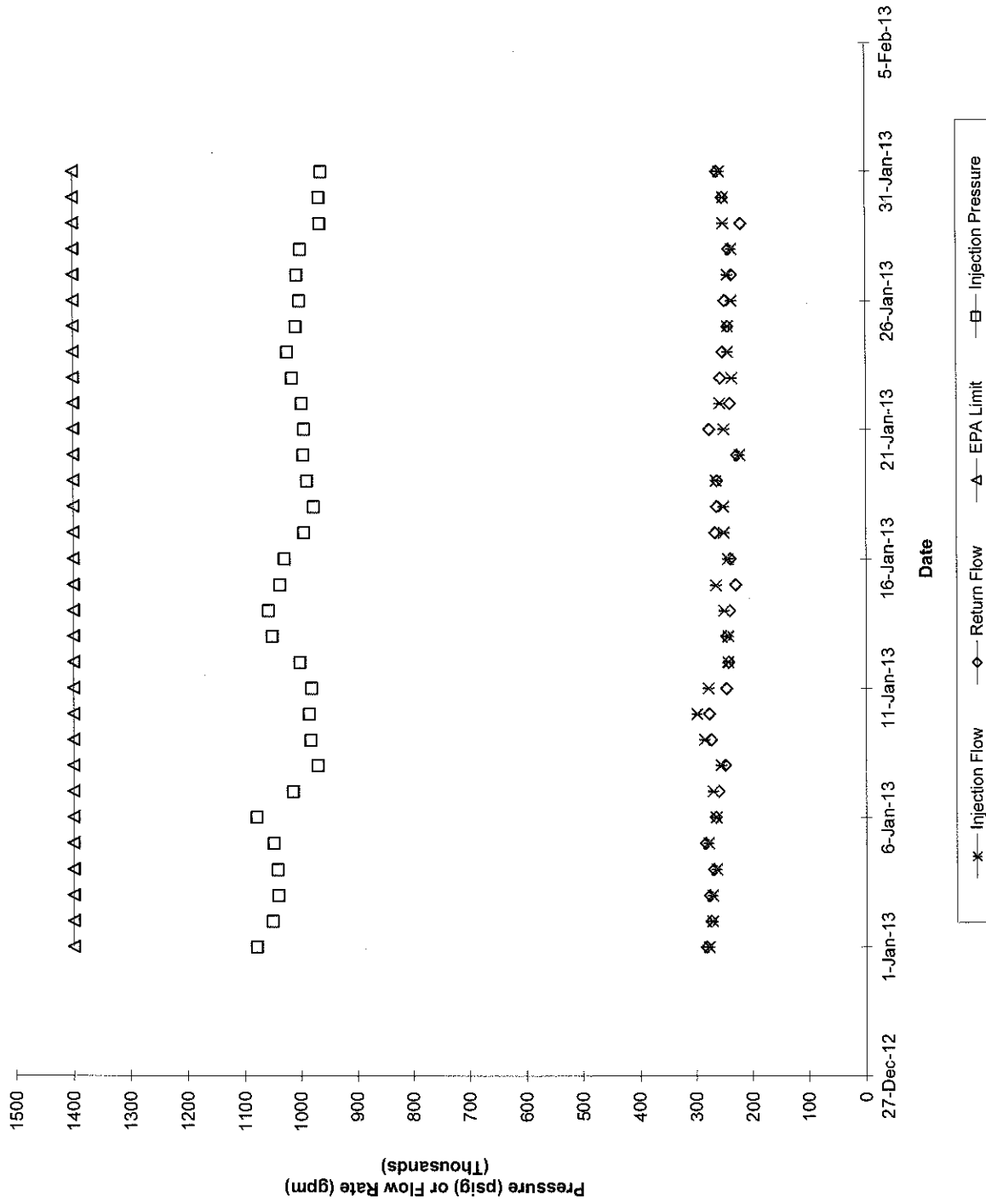
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# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates





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Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	1118	260	260
2-Jan-13	1175	290	290
3-Jan-13	1167	290	290
4-Jan-13	1145	271	271
5-Jan-13	1105	275	275
6-Jan-13	1150	260	260
7-Jan-13	1183	245	245
8-Jan-13	1175	311	311
9-Jan-13	1155	279	279
10-Jan-13	1168	278	278
11-Jan-13	1163	274	274
12-Jan-13	1175	275	275
13-Jan-13	1145	286	286
14-Jan-13	1133	264	264
15-Jan-13	1193	257	257
16-Jan-13	1175	252	252
17-Jan-13	1183	256	256
18-Jan-13	1200	273	273
19-Jan-13	1170	265	265
20-Jan-13	1183	255	255
21-Jan-13	1150	245	245
22-Jan-13	1125	279	279
23-Jan-13	1145	262	262
24-Jan-13	1195	260	260
25-Jan-13	1200	269	269
26-Jan-13	1163	271	271
27-Jan-13	1200	254	254
28-Jan-13	1200	259	259
29-Jan-13	1167	216	216
30-Jan-13	1250	276	276
31-Jan-13	1175	282	282

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Cavity 2030

Jan-13  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1169	267	267

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Jan-13	1250	276

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
5-Jan-13	1105	275

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
8-Jan-13	311	1175

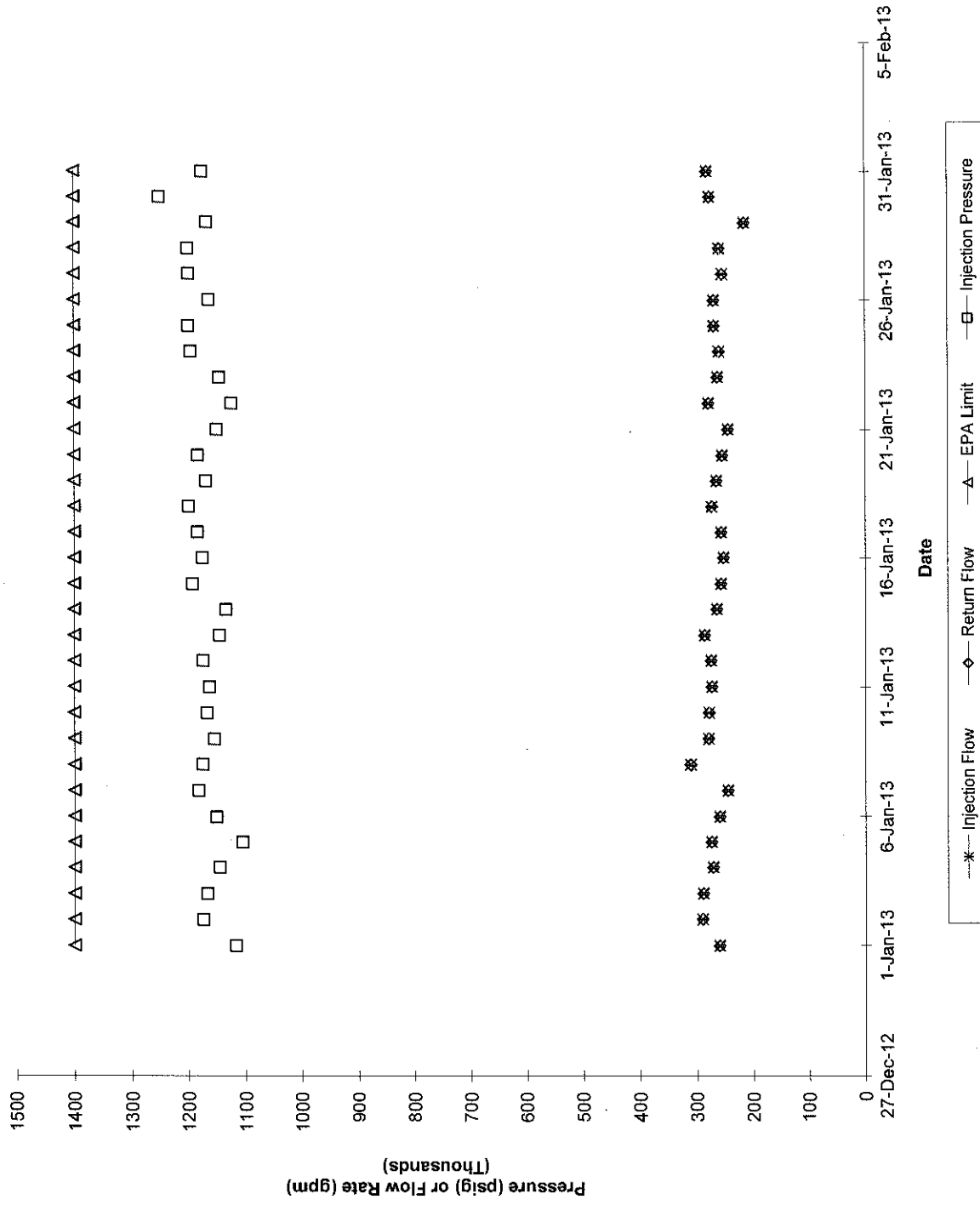
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	shut in	shut in	shut in
2-Jan-13	shut in	shut in	shut in
3-Jan-13	shut in	shut in	shut in
4-Jan-13	shut in	shut in	shut in
5-Jan-13	shut in	shut in	shut in
6-Jan-13	shut in	shut in	shut in
7-Jan-13	shut in	shut in	shut in
8-Jan-13	shut in	shut in	shut in
9-Jan-13	shut in	shut in	shut in
10-Jan-13	shut in	shut in	shut in
11-Jan-13	shut in	shut in	shut in
12-Jan-13	shut in	shut in	shut in
13-Jan-13	shut in	shut in	shut in
14-Jan-13	shut in	shut in	shut in
15-Jan-13	shut in	shut in	shut in
16-Jan-13	shut in	shut in	shut in
17-Jan-13	shut in	shut in	shut in
18-Jan-13	shut in	shut in	shut in
19-Jan-13	shut in	shut in	shut in
20-Jan-13	shut in	shut in	shut in
21-Jan-13	shut in	shut in	shut in
22-Jan-13	shut in	shut in	shut in
23-Jan-13	shut in	shut in	shut in
24-Jan-13	shut in	shut in	shut in
25-Jan-13	shut in	shut in	shut in
26-Jan-13	shut in	shut in	shut in
27-Jan-13	shut in	shut in	shut in
28-Jan-13	shut in	shut in	shut in
29-Jan-13	shut in	shut in	shut in
30-Jan-13	shut in	shut in	shut in
31-Jan-13	shut in	shut in	shut in

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✓ CAVITY 2061

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Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-13	1118	110	110
2-Jan-13	1175	82	82
3-Jan-13	1167	113	113
4-Jan-13	1145	112	112
5-Jan-13	1105	114	114
6-Jan-13	1150	83	83
7-Jan-13	1183	123	123
8-Jan-13	1175	135	135
9-Jan-13	1155	130	130
10-Jan-13	1168	131	131
11-Jan-13	1163	139	139
12-Jan-13	1175	133	133
13-Jan-13	1145	118	118
14-Jan-13	1133	83	83
15-Jan-13	1193	87	87
16-Jan-13	1175	101	101
17-Jan-13	1183	109	109
18-Jan-13	1200	106	106
19-Jan-13	1170	108	108
20-Jan-13	1183	135	135
21-Jan-13	1150	106	106
22-Jan-13	1125	108	108
23-Jan-13	1145	108	108
24-Jan-13	1195	106	106
25-Jan-13	1200	96	96
26-Jan-13	1163	92	92
27-Jan-13	1200	110	110
28-Jan-13	1200	103	103
29-Jan-13	1167	133	133
30-Jan-13	1250	111	111
31-Jan-13	1175	107	107

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Cavity 2061

Jan-13  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1169	111	111

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Jan-13	1250	111

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
5-Jan-13	1105	114

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
11-Jan-13	139	1163

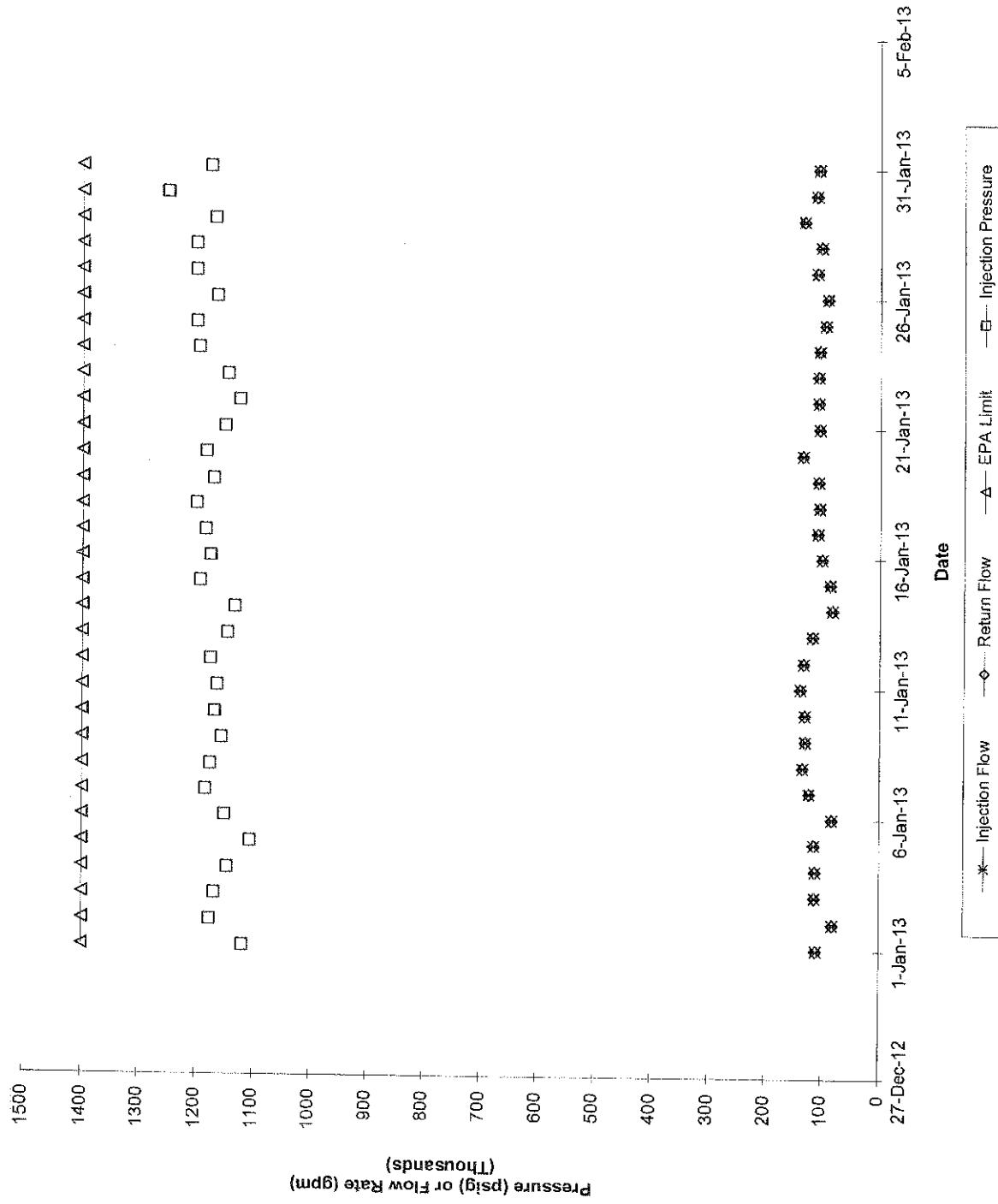
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# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



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Cavity-2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
✓ 1-Jan-13	shut in	shut in	shut in
2-Jan-13	shut in	shut in	shut in
3-Jan-13	shut in	shut in	shut in
4-Jan-13	shut in	shut in	shut in
5-Jan-13	shut in	shut in	shut in
6-Jan-13	shut in	shut in	shut in
7-Jan-13	shut in	shut in	shut in
8-Jan-13	shut in	shut in	shut in
9-Jan-13	shut in	shut in	shut in
10-Jan-13	shut in	shut in	shut in
11-Jan-13	shut in	shut in	shut in
12-Jan-13	shut in	shut in	shut in
13-Jan-13	shut in	shut in	shut in
14-Jan-13	shut in	shut in	shut in
15-Jan-13	shut in	shut in	shut in
16-Jan-13	shut in	shut in	shut in
17-Jan-13	shut in	shut in	shut in
18-Jan-13	shut in	shut in	shut in
19-Jan-13	shut in	shut in	shut in
20-Jan-13	shut in	shut in	shut in
21-Jan-13	shut in	shut in	shut in
22-Jan-13	shut in	shut in	shut in
23-Jan-13	shut in	shut in	shut in
24-Jan-13	shut in	shut in	shut in
25-Jan-13	shut in	shut in	shut in
26-Jan-13	shut in	shut in	shut in
27-Jan-13	shut in	shut in	shut in
28-Jan-13	shut in	shut in	shut in
29-Jan-13	shut in	shut in	shut in
30-Jan-13	shut in	shut in	shut in
31-Jan-13	shut in	shut in	shut in

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Mosaic Potash Hersey LLC  
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www.mosaicco.com  
Tel 231-832-8800

January 1, 2013

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
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Chicago, IL 60604

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JAN 22 2013

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Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for December 2012

During the month of December, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 28 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 28 days this month.
- Cavity KCI 1060 was in operation for 5 days this month.
- Cavity KCI 2030 was in operation for 28 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 28 days this month.
- Cavity KCI 2062 was not in operation for this month.

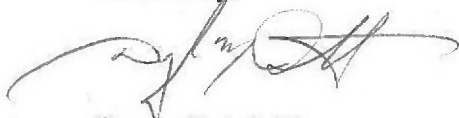
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Production/Minefield Superintendent.

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1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
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I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Production/Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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CAVITY 1010

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	shut in	shut in	shut in
2-Dec-12	shut in	shut in	shut in
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	shut in	shut in	shut in
6-Dec-12	shut in	shut in	shut in
7-Dec-12	shut in	shut in	shut in
8-Dec-12	shut in	shut in	shut in
9-Dec-12	shut in	shut in	shut in
10-Dec-12	shut in	shut in	shut in
11-Dec-12	shut in	shut in	shut in
12-Dec-12	shut in	shut in	shut in
13-Dec-12	shut in	shut in	shut in
14-Dec-12	shut in	shut in	shut in
15-Dec-12	shut in	shut in	shut in
16-Dec-12	shut in	shut in	shut in
17-Dec-12	shut in	shut in	shut in
18-Dec-12	shut in	shut in	shut in
19-Dec-12	shut in	shut in	shut in
20-Dec-12	shut in	shut in	shut in
21-Dec-12	shut in	shut in	shut in
22-Dec-12	shut in	shut in	shut in
23-Dec-12	shut in	shut in	shut in
24-Dec-12	shut in	shut in	shut in
25-Dec-12	shut in	shut in	shut in
26-Dec-12	shut in	shut in	shut in
27-Dec-12	shut in	shut in	shut in
28-Dec-12	shut in	shut in	shut in
29-Dec-12	shut in	shut in	shut in
30-Dec-12	shut in	shut in	shut in
31-Dec-12	shut in	shut in	shut in

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CAVITY 1020

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	1119	283	363
2-Dec-12	1094	159	201
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	1019	48	81
6-Dec-12	shut in	shut in	shut in
7-Dec-12	1143	299	287
8-Dec-12	1187	295	319
9-Dec-12	1151	285	311
10-Dec-12	1093	324	358
11-Dec-12	1072	339	349
12-Dec-12	1065	343	372
13-Dec-12	1025	348	375
14-Dec-12	1038	353	375
15-Dec-12	1038	347	368
16-Dec-12	1053	344	361
17-Dec-12	1075	353	383
18-Dec-12	1046	371	391
19-Dec-12	1075	341	356
20-Dec-12	1113	331	343
21-Dec-12	1130	326	349
22-Dec-12	1048	326	371
23-Dec-12	1111	359	378
24-Dec-12	1124	342	358
25-Dec-12	1040	334	371
26-Dec-12	969	233	300
27-Dec-12	983	108	112
28-Dec-12	1017	118	90
29-Dec-12	1040	85	127
30-Dec-12	1050	99	110
31-Dec-12	1074	103	119

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Cavity 1020

Dec-12  
Monthly Averages

Injection Pressure (psi)  
1071

Injection Flow (gpm)  
271

Return Flow (gpm)  
296

Maximum Injection Pressure and corresponding Injection Flow

Date  
8-Dec-12

Injection Pressure (psi)  
1187

Injection Flow (gpm)  
295

Minimum Injection Pressure and corresponding Injection Flow

Date  
26-Dec-12

Injection Pressure (psi)  
969

Injection Flow (gpm)  
233

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
18-Dec-12

Injection Flow (gpm)  
371

Injection Pressure (psi)  
1046

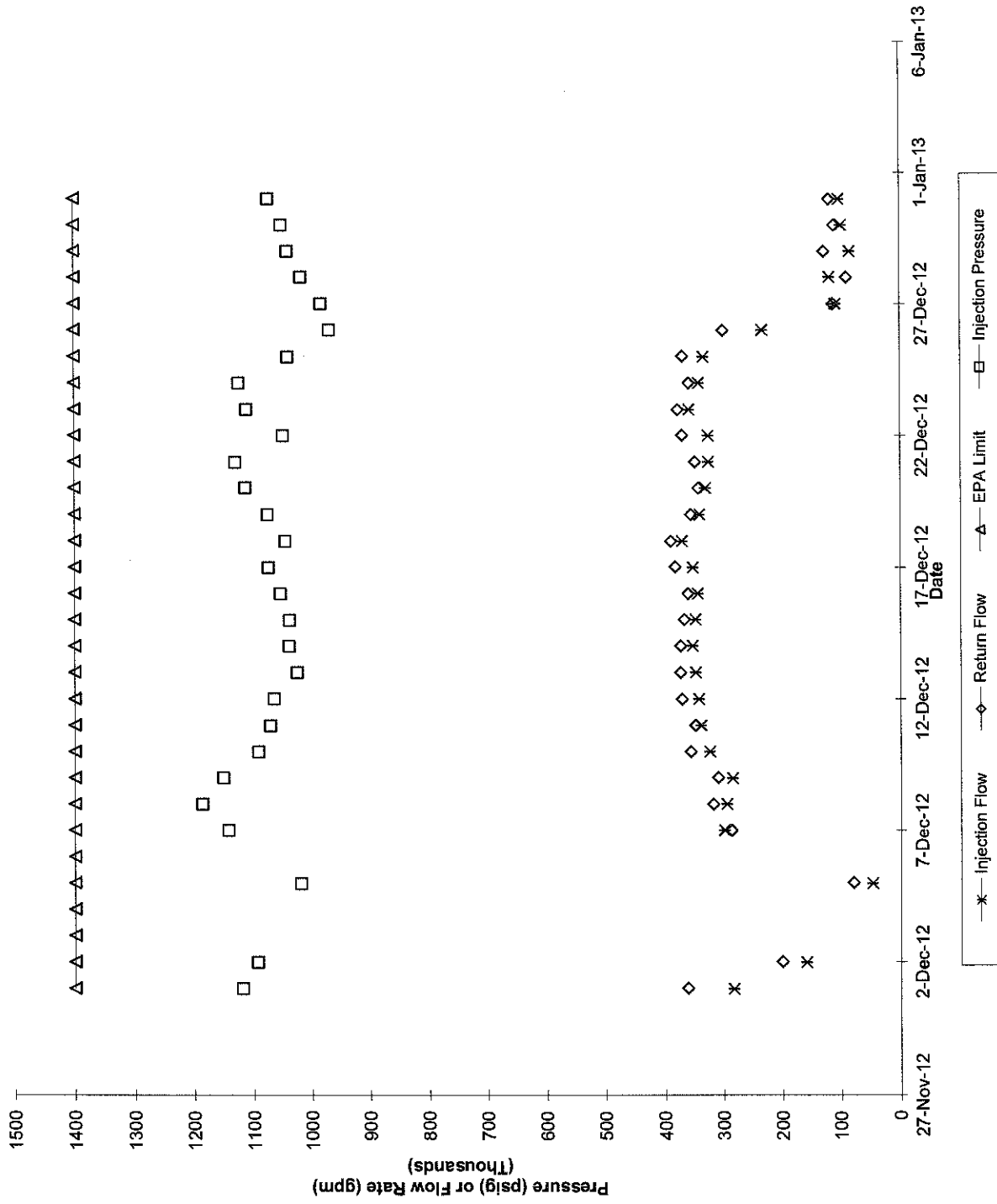
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



CAVITY 1040

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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	shut in	shut in	shut in
2-Dec-12	shut in	shut in	shut in
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	shut in	shut in	shut in
6-Dec-12	shut in	shut in	shut in
7-Dec-12	shut in	shut in	shut in
8-Dec-12	shut in	shut in	shut in
9-Dec-12	shut in	shut in	shut in
10-Dec-12	shut in	shut in	shut in
11-Dec-12	shut in	shut in	shut in
12-Dec-12	shut in	shut in	shut in
13-Dec-12	shut in	shut in	shut in
14-Dec-12	shut in	shut in	shut in
15-Dec-12	shut in	shut in	shut in
16-Dec-12	shut in	shut in	shut in
17-Dec-12	shut in	shut in	shut in
18-Dec-12	shut in	shut in	shut in
19-Dec-12	shut in	shut in	shut in
20-Dec-12	shut in	shut in	shut in
21-Dec-12	shut in	shut in	shut in
22-Dec-12	shut in	shut in	shut in
23-Dec-12	shut in	shut in	shut in
24-Dec-12	shut in	shut in	shut in
25-Dec-12	shut in	shut in	shut in
26-Dec-12	shut in	shut in	shut in
27-Dec-12	shut in	shut in	shut in
28-Dec-12	shut in	shut in	shut in
29-Dec-12	shut in	shut in	shut in
30-Dec-12	shut in	shut in	shut in
31-Dec-12	shut in	shut in	shut in

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CAVITY 1050

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	1177	135	135
2-Dec-12	1200	95	95
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	1200	125	125
6-Dec-12	shut in	shut in	shut in
7-Dec-12	1177	173	173
8-Dec-12	1130	165	165
9-Dec-12	1130	173	173
10-Dec-12	1100	182	182
11-Dec-12	1183	172	172
12-Dec-12	1133	161	161
13-Dec-12	1187	159	159
14-Dec-12	1183	180	180
15-Dec-12	1170	181	181
16-Dec-12	1183	172	172
17-Dec-12	1153	184	184
18-Dec-12	1125	170	170
19-Dec-12	1200	148	148
20-Dec-12	1167	180	180
21-Dec-12	1200	172	172
22-Dec-12	1130	173	173
23-Dec-12	1133	154	154
24-Dec-12	1188	168	168
25-Dec-12	1175	167	167
26-Dec-12	1100	188	188
27-Dec-12	1125	120	120
28-Dec-12	1200	133	133
29-Dec-12	1180	121	121
30-Dec-12	1188	125	125
31-Dec-12	1133	129	129

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Cavity 1050

Dec-12  
Monthly Averages

Injection Pressure (psi)  
1163

Injection Flow (gpm)  
157

Return Flow (gpm)  
157

Maximum Injection Pressure and corresponding Injection Flow

Date  
2-Dec-12

Injection Pressure (psi)  
1200

Injection Flow (gpm)  
95

Minimum Injection Pressure and corresponding Injection Flow

Date  
10-Dec-12

Injection Pressure (psi)  
1100

Injection Flow (gpm)  
182

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
26-Dec-12

Injection Flow (gpm)  
188

Injection Pressure (psi)  
1100

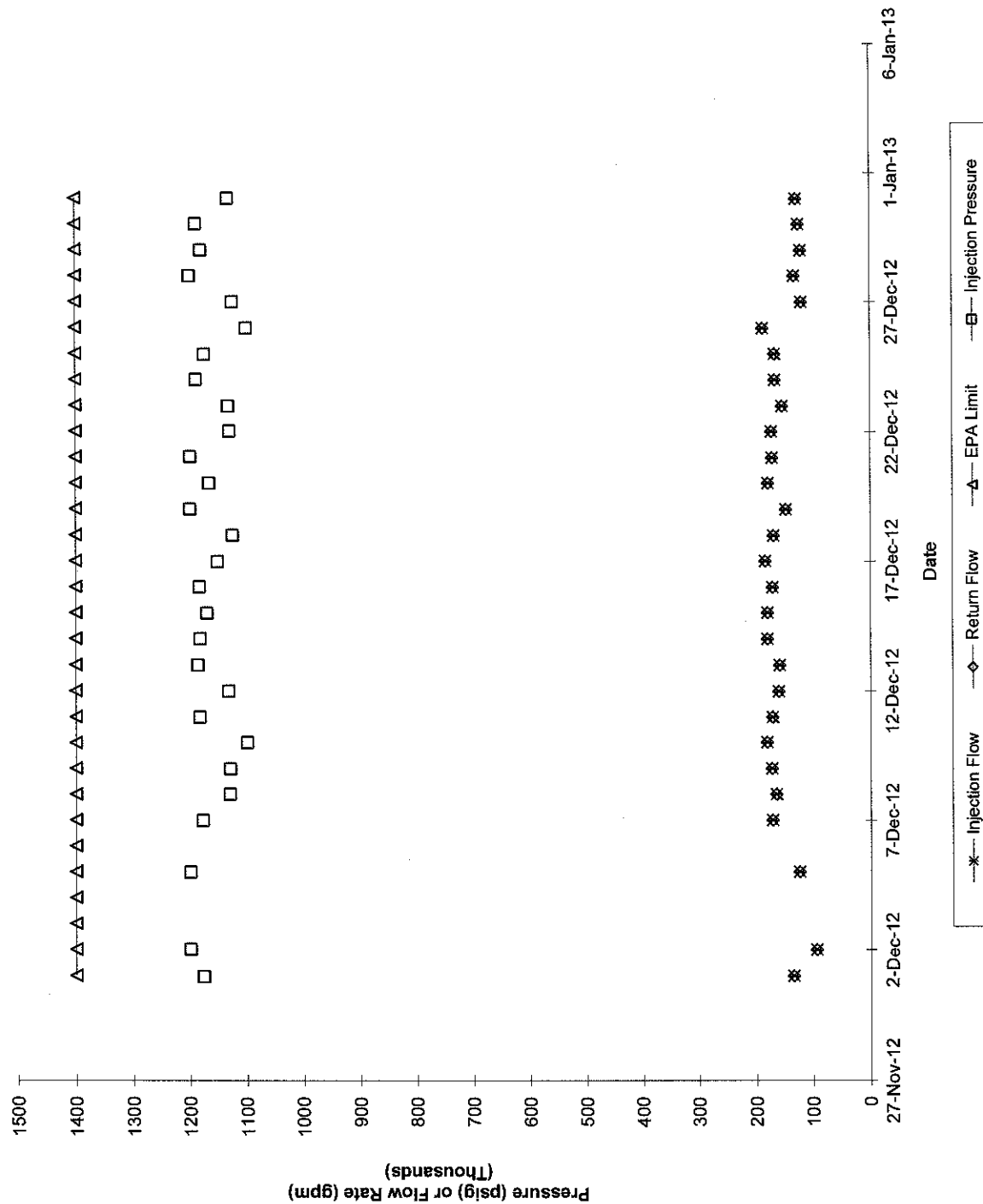
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# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	shut in	shut in	shut in
2-Dec-12	shut in	shut in	shut in
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	shut in	shut in	shut in
6-Dec-12	shut in	shut in	shut in
7-Dec-12	shut in	shut in	shut in
8-Dec-12	shut in	shut in	shut in
9-Dec-12	shut in	shut in	shut in
10-Dec-12	shut in	shut in	shut in
11-Dec-12	shut in	shut in	shut in
12-Dec-12	shut in	shut in	shut in
13-Dec-12	shut in	shut in	shut in
14-Dec-12	shut in	shut in	shut in
15-Dec-12	shut in	shut in	shut in
16-Dec-12	shut in	shut in	shut in
17-Dec-12	shut in	shut in	shut in
18-Dec-12	shut in	shut in	shut in
19-Dec-12	shut in	shut in	shut in
20-Dec-12	shut in	shut in	shut in
21-Dec-12	shut in	shut in	shut in
22-Dec-12	shut in	shut in	shut in
23-Dec-12	shut in	shut in	shut in
24-Dec-12	shut in	shut in	shut in
25-Dec-12	shut in	shut in	shut in
26-Dec-12	shut in	shut in	shut in
27-Dec-12	983	278	321
28-Dec-12	1017	264	295
29-Dec-12	1038	271	295
30-Dec-12	1050	278	286
31-Dec-12	1074	278	286

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Cavity 1060

Dec-12  
Monthly Averages

Injection Pressure  
1032

Injection Flow  
274

Return Flow  
297

Maximum Injection Pressure and corresponding Injection Flow

Date  
31-Dec-12

Injection Pressure  
1074

Injection Flow  
278

Minimum Injection Pressure and corresponding Injection Flow

Date  
27-Dec-12

Injection Pressure  
983

Injection Flow  
278

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
27-Dec-12

Injection Flow  
278

Injection Pressure  
983

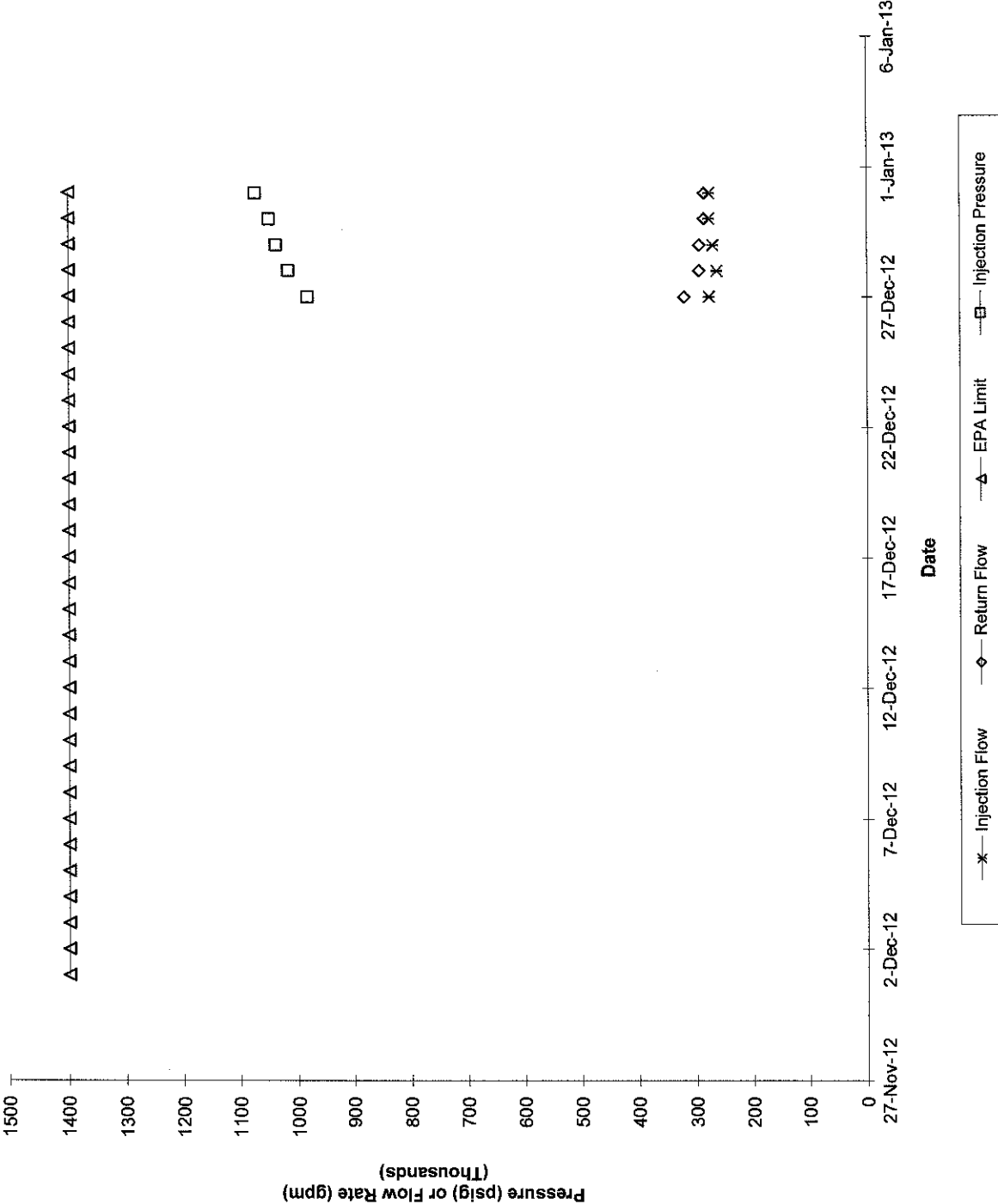
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Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



CAVITY 2030 ✓

Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	1177	277	277
2-Dec-12	120	152	152
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	1200	46	46
6-Dec-12	shut in	shut in	shut in
7-Dec-12	1177	297	297
8-Dec-12	1130	274	274
9-Dec-12	1130	257	257
10-Dec-12	1100	266	266
11-Dec-12	1200	263	263
12-Dec-12	1133	263	263
13-Dec-12	1187	240	240
14-Dec-12	1183	291	291
15-Dec-12	1170	278	278
16-Dec-12	1183	278	278
17-Dec-12	1153	274	274
18-Dec-12	1125	282	282
19-Dec-12	1200	262	262
20-Dec-12	1167	269	269
21-Dec-12	1200	256	256
22-Dec-12	1130	262	262
23-Dec-12	1133	250	250
24-Dec-12	1188	237	237
25-Dec-12	1175	73	73
26-Dec-12	1100	261	261
27-Dec-12	1125	270	270
28-Dec-12	1200	242	242
29-Dec-12	1180	259	259
30-Dec-12	1188	275	275
31-Dec-12	1133	267	267

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Cavity 2030

Dec-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1125	247	247

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
5-Dec-12	1200	46

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
2-Dec-12	120	152

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
7-Dec-12	297	1177

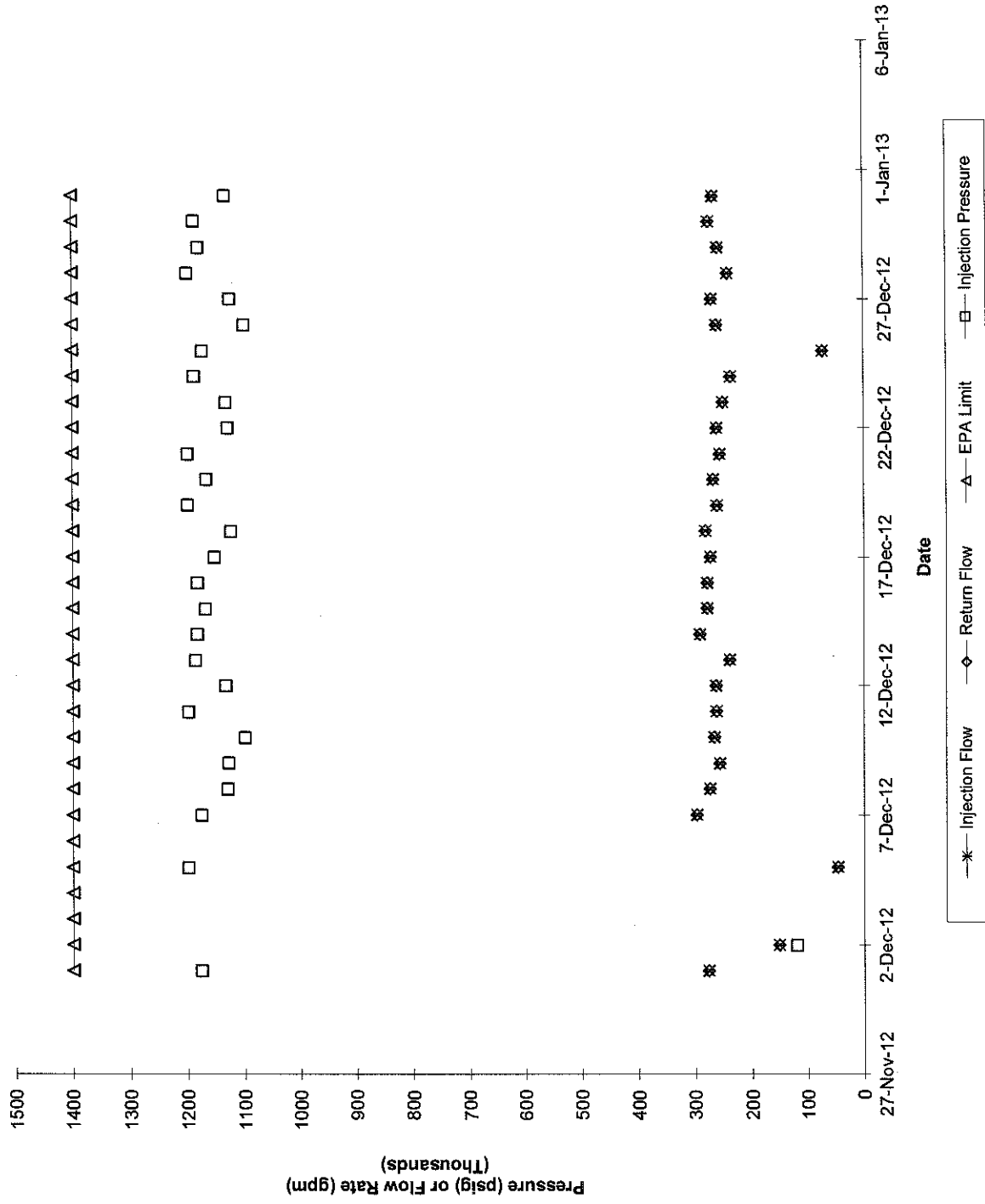
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	shut in	shut in	shut in
2-Dec-12	shut in	shut in	shut in
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	shut in	shut in	shut in
6-Dec-12	shut in	shut in	shut in
7-Dec-12	shut in	shut in	shut in
8-Dec-12	shut in	shut in	shut in
9-Dec-12	shut in	shut in	shut in
10-Dec-12	shut in	shut in	shut in
11-Dec-12	shut in	shut in	shut in
12-Dec-12	shut in	shut in	shut in
13-Dec-12	shut in	shut in	shut in
14-Dec-12	shut in	shut in	shut in
15-Dec-12	shut in	shut in	shut in
16-Dec-12	shut in	shut in	shut in
17-Dec-12	shut in	shut in	shut in
18-Dec-12	shut in	shut in	shut in
19-Dec-12	shut in	shut in	shut in
20-Dec-12	shut in	shut in	shut in
21-Dec-12	shut in	shut in	shut in
22-Dec-12	shut in	shut in	shut in
23-Dec-12	shut in	shut in	shut in
24-Dec-12	shut in	shut in	shut in
25-Dec-12	shut in	shut in	shut in
26-Dec-12	shut in	shut in	shut in
27-Dec-12	shut in	shut in	shut in
28-Dec-12	shut in	shut in	shut in
29-Dec-12	shut in	shut in	shut in
30-Dec-12	shut in	shut in	shut in
31-Dec-12	shut in	shut in	shut in

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CAVITY 2061

Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	1177	85	85
2-Dec-12	1200	71	71
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	1200	35	35
6-Dec-12	shut in	shut in	shut in
7-Dec-12	1177	96	96
8-Dec-12	1130	62	62
9-Dec-12	1130	57	57
10-Dec-12	1100	74	74
11-Dec-12	1200	83	83
12-Dec-12	1133	106	106
13-Dec-12	1187	109	109
14-Dec-12	1183	80	80
15-Dec-12	1170	90	90
16-Dec-12	1183	75	75
17-Dec-12	1153	81	81
18-Dec-12	1125	92	92
19-Dec-12	1200	101	101
20-Dec-12	1167	80	80
21-Dec-12	1200	94	94
22-Dec-12	1130	102	102
23-Dec-12	1133	121	121
24-Dec-12	1188	112	112
25-Dec-12	1175	123	123
26-Dec-12	1100	141	141
27-Dec-12	1125	156	156
28-Dec-12	1200	160	160
29-Dec-12	1180	128	128
30-Dec-12	1188	112	112
31-Dec-12	1133	110	110

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Cavity 2061

Dec-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1163	98	98

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
2-Dec-12	1200	71

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
10-Dec-12	1100	74

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
28-Dec-12	160	1200

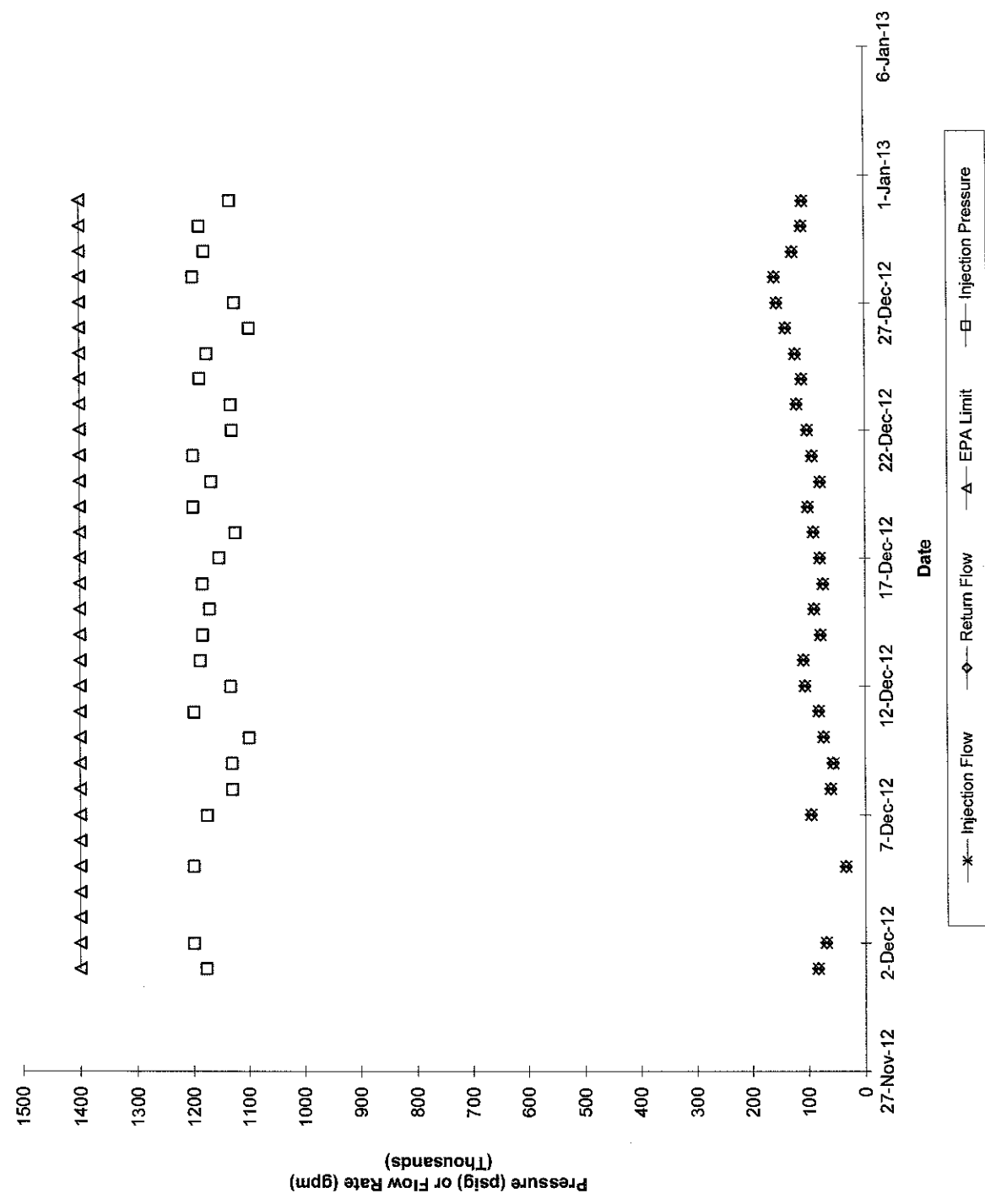
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# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates





CAVITY 2062 ✓

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Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Dec-12	shut in	shut in	shut in
2-Dec-12	shut in	shut in	shut in
3-Dec-12	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in
5-Dec-12	shut in	shut in	shut in
6-Dec-12	shut in	shut in	shut in
7-Dec-12	shut in	shut in	shut in
8-Dec-12	shut in	shut in	shut in
9-Dec-12	shut in	shut in	shut in
10-Dec-12	shut in	shut in	shut in
11-Dec-12	shut in	shut in	shut in
12-Dec-12	shut in	shut in	shut in
13-Dec-12	shut in	shut in	shut in
14-Dec-12	shut in	shut in	shut in
15-Dec-12	shut in	shut in	shut in
16-Dec-12	shut in	shut in	shut in
17-Dec-12	shut in	shut in	shut in
18-Dec-12	shut in	shut in	shut in
19-Dec-12	shut in	shut in	shut in
20-Dec-12	shut in	shut in	shut in
21-Dec-12	shut in	shut in	shut in
22-Dec-12	shut in	shut in	shut in
23-Dec-12	shut in	shut in	shut in
24-Dec-12	shut in	shut in	shut in
25-Dec-12	shut in	shut in	shut in
26-Dec-12	shut in	shut in	shut in
27-Dec-12	shut in	shut in	shut in
28-Dec-12	shut in	shut in	shut in
29-Dec-12	shut in	shut in	shut in
30-Dec-12	shut in	shut in	shut in
31-Dec-12	shut in	shut in	shut in

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Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

January 14, 2013

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

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Attn: Lisa Perenchio

SUBJ: **Fourth Quarter Report** – Solution Mining Wells  
For the period of October 1, 2012 – December 31, 2012  
Permit No.: MI-133-3G-A002

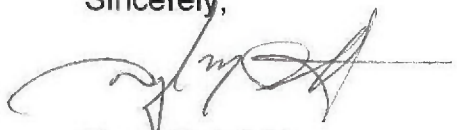
1. Solution Mining operations from Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061, Cavity 2062 were conducted during the quarter.
2. Well re-work reports for all well workovers during the period were submitted under separate cover by Doug Patulski, Minefield Superintendent.
3. The flowrates to and from the solution mining wells are monitored continuously. The required quarterly well injection/return balance demonstrations for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062 are attached.
4. The fluid level in the injection zone is "at surface".
5. Attached are copies of the well fluid chemical analyses for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062.
6. Attached are the chemical analyses of the fluid samples obtained from the ground water monitoring wells.

The requirements of Part I (E)(10), Part II (B)(2) and Part III (C)(3) of Permit No. MI-133-3G-A002 are being met. The samples and measurements are representative of the monitoring activity and the analysis complies with the methods and procedures approved in the Waste Analysis Plan.

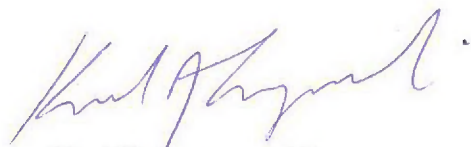
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Please contact me at (231) 832-8800 if you have any questions.

Sincerely,



Doug Patulski  
Production/Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

**Quarterly Injection/Return Flow Balances  
Cavity 1010**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	shut in	shut in	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in	shut in	shut in
31-Oct-12	shut in	shut in	shut in	shut in	shut in
1-Nov-12	shut in	shut in	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in	shut in	shut in

## Cavity 1010

[illegible]

**Quarterly Injection/Return Flow Balances  
Cavity 1020**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	322	4.3	326	384	0.85
2-Oct-12	252	3.2	255	339	0.75
3-Oct-12	137	5.8	143	219	0.65
4-Oct-12	75	3.1	78	107	0.73
5-Oct-12	73	0.0	73	100	0.73
6-Oct-12	76	0.0	76	104	0.73
7-Oct-12	81	0.0	81	105	0.77
8-Oct-12	92	5.0	97	111	0.87
9-Oct-12	107	4.2	111	115	0.97
10-Oct-12	88	3.9	92	122	0.75
11-Oct-12	86	4.5	91	111	0.82
12-Oct-12	87	3.7	91	163	0.56
13-Oct-12	89	3.3	92	69	1.34
14-Oct-12	92	3.5	96	127	0.75
15-Oct-12	92	4.0	96	122	0.79
16-Oct-12	89	4.0	93	120	0.78
17-Oct-12	100	3.7	104	133	0.78
18-Oct-12	102	3.5	106	122	0.86
19-Oct-12	100	4.0	104	116	0.90
20-Oct-12	114	0.0	114	122	0.93
21-Oct-12	100	4.0	104	132	0.79
22-Oct-12	97	0.0	97	124	0.78
23-Oct-12	95	3.0	98	120	0.82
24-Oct-12	99	2.5	102	129	0.79
25-Oct-12	92	2.7	95	95	1.00
26-Oct-12	93	3.4	96	108	0.89
27-Oct-12	99	4.1	103	127	0.81
28-Oct-12	115	4.3	119	124	0.96
29-Oct-12	110	4.9	115	168	0.68
30-Oct-12	133	3.3	136	164	0.83
31-Oct-12	144	2.4	146	187	0.78
1-Nov-12	149	2.4	151	170	0.89
2-Nov-12	156	3.2	159	176	0.90
3-Nov-12	164	4.0	168	194	0.87
4-Nov-12	149	0.0	149	181	0.82
5-Nov-12	159	1.5	161	188	0.85
6-Nov-12	160	4.2	164	174	0.94
7-Nov-12	162	4.4	166	181	0.92
8-Nov-12	164	4.2	168	181	0.93
9-Nov-12	154	3.7	158	181	0.87
10-Nov-12	167	2.8	170	175	0.97
11-Nov-12	151	1.1	152	158	0.96
12-Nov-12	143	4.2	147	172	0.86
13-Nov-12	137	2.6	140	187	0.75
14-Nov-12	147	3.5	151	184	0.82

**Quarterly Injection/Return Flow Balances**  
**Cavity 1020**

15-Nov-12	152	3.6	156	187	0.83
16-Nov-12	156	3.8	160	193	0.83
17-Nov-12	162	4.2	166	195	0.85
18-Nov-12	150	3.9	154	190	0.81
19-Nov-12	182	3.9	186	192	0.97
20-Nov-12	170	4.1	174	220	0.79
21-Nov-12	157	4.9	162	218	0.74
22-Nov-12	184	4.9	189	229	0.82
23-Nov-12	207	4.7	212	251	0.84
24-Nov-12	203	2.7	206	237	0.87
25-Nov-12	205	3.2	208	236	0.88
26-Nov-12	205	3.6	209	235	0.89
27-Nov-12	211	4.4	215	239	0.90
28-Nov-12	173	2.9	176	234	0.75
29-Nov-12	208	3.8	212	259	0.82
30-Nov-12	307	2.6	310	312	0.99
1-Dec-12	283	3.3	286	363	0.79
2-Dec-12	159	2.4	161	201	0.80
3-Dec-12	shut in	shut in	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in	shut in	shut in
5-Dec-12	48	3.2	51	81	0.63
6-Dec-12	shut in	shut in	shut in	shut in	shut in
7-Dec-12	299	5.2	304	287	1.06
8-Dec-12	295	1.9	297	319	0.93
9-Dec-12	285	2.6	288	311	0.92
10-Dec-12	324	3.5	328	358	0.91
11-Dec-12	339	1.6	341	349	0.98
12-Dec-12	343	4.0	347	372	0.93
13-Dec-12	348	4.9	353	375	0.94
14-Dec-12	353	3.2	356	375	0.95
15-Dec-12	347	4.1	351	368	0.95
16-Dec-12	344	3.3	347	361	0.96
17-Dec-12	353	0.0	353	383	0.92
18-Dec-12	371	0.0	371	391	0.95
19-Dec-12	341	1.5	343	356	0.96
20-Dec-12	331	5.6	337	343	0.98
21-Dec-12	326	6.3	332	349	0.95
22-Dec-12	326	6.8	333	371	0.90
23-Dec-12	359	4.9	364	378	0.96
24-Dec-12	342	2.0	344	358	0.96
25-Dec-12	334	5.5	340	371	0.92
26-Dec-12	233	6.8	240	300	0.80
27-Dec-12	108	6.8	115	112	1.03
28-Dec-12	118	6.2	124	90	1.38
29-Dec-12	85	4.1	89	127	0.70
30-Dec-12	99	5.2	104	110	0.95
31-Dec-12	103	5.0	108	119	0.91
Averages	182	3.5	188	211	0.87



**Quarterly Injection/Return Flow Balances  
Cavity 1040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	shut in	shut in	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in	shut in	shut in
31-Oct-12	shut in	shut in	shut in	shut in	shut in
1-Nov-12	shut in	shut in	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in	shut in	shut in

### Quarterly Injection/Return Flow Balances Cavity 1040

[illegible]

**Quarterly Injection/Return Flow Balances  
Cavity 1050**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	166	2.9	169	166	1.02
2-Oct-12	169	2.5	172	169	1.01
3-Oct-12	166	5.1	171	166	1.03
4-Oct-12	173	3.4	176	173	1.02
5-Oct-12	163	0.0	163	163	1.00
6-Oct-12	173	0.0	173	173	1.00
7-Oct-12	157	0.0	157	157	1.00
8-Oct-12	163	3.0	166	163	1.02
9-Oct-12	165	4.7	170	165	1.03
10-Oct-12	156	3.8	160	156	1.02
11-Oct-12	169	4.6	174	169	1.03
12-Oct-12	182	4.4	186	182	1.02
13-Oct-12	180	3.8	184	180	1.02
14-Oct-12	175	4.4	179	175	1.03
15-Oct-12	161	4.1	165	161	1.03
16-Oct-12	154	4.4	158	154	1.03
17-Oct-12	170	1.9	172	170	1.01
18-Oct-12	177	5.7	183	177	1.03
19-Oct-12	157	4.0	161	157	1.03
20-Oct-12	175	0.0	175	175	1.00
21-Oct-12	172	4.0	176	172	1.02
22-Oct-12	158	0.0	158	158	1.00
23-Oct-12	154	6.5	161	154	1.04
24-Oct-12	139	3.9	143	139	1.03
25-Oct-12	134	2.8	137	134	1.02
26-Oct-12	176	4.2	180	176	1.02
27-Oct-12	173	4.5	178	173	1.03
28-Oct-12	170	5.0	175	170	1.03
29-Oct-12	134	4.2	138	134	1.03
30-Oct-12	97	2.8	100	97	1.03
31-Oct-12	144	4.2	148	144	1.03
1-Nov-12	147	3.6	151	147	1.02
2-Nov-12	119	3.1	122	119	1.03
3-Nov-12	140	5.0	145	140	1.04
4-Nov-12	133	5.3	138	133	1.04
5-Nov-12	139	5.0	144	139	1.04
6-Nov-12	144	4.4	148	144	1.03
7-Nov-12	133	4.7	138	133	1.04
8-Nov-12	127	4.8	132	127	1.04
9-Nov-12	161	4.2	165	161	1.03
10-Nov-12	146	2.9	149	146	1.02
11-Nov-12	146	3.8	150	146	1.03
12-Nov-12	144	4.5	149	144	1.03
13-Nov-12	127	4.2	131	127	1.03
14-Nov-12	130	3.8	134	130	1.03

**Quarterly Injection/Return Flow Balances  
Cavity 1050**

15-Nov-12	140	3.9	144	140	1.03
16-Nov-12	135	3.2	138	135	1.02
17-Nov-12	146	2.9	149	146	1.02
18-Nov-12	120	2.6	123	120	1.02
19-Nov-12	152	3.9	156	152	1.03
20-Nov-12	165	4.6	170	165	1.03
21-Nov-12	137	3.7	141	137	1.03
22-Nov-12	132	2.8	135	132	1.02
23-Nov-12	124	3.4	127	124	1.03
24-Nov-12	134	2.6	137	134	1.02
25-Nov-12	157	1.9	159	157	1.01
26-Nov-12	142	1.7	144	142	1.01
27-Nov-12	110	1.2	111	110	1.01
28-Nov-12	147	2.5	150	147	1.02
29-Nov-12	135	3.6	139	135	1.03
30-Nov-12	113	4.4	117	113	1.04
1-Dec-12	135	3.9	139	135	1.03
2-Dec-12	95	3.7	99	95	1.04
3-Dec-12	shut in	shut in	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in	shut in	shut in
5-Dec-12	125	3.8	129	125	1.03
6-Dec-12	shut in	shut in	shut in	shut in	shut in
7-Dec-12	173	5.3	178	173	1.03
8-Dec-12	165	3.5	169	165	1.02
9-Dec-12	173	2.7	176	173	1.02
10-Dec-12	182	2.4	184	182	1.01
11-Dec-12	172	1.1	173	172	1.01
12-Dec-12	161	4.2	165	161	1.03
13-Dec-12	159	2.9	162	159	1.02
14-Dec-12	180	3.5	184	180	1.02
15-Dec-12	181	0.0	181	181	1.00
16-Dec-12	172	3.4	175	172	1.02
17-Dec-12	184	1.6	186	184	1.01
18-Dec-12	170	2.1	172	170	1.01
19-Dec-12	148	1.5	150	148	1.01
20-Dec-12	180	3.2	183	180	1.02
21-Dec-12	172	4.1	176	172	1.02
22-Dec-12	173	2.7	176	173	1.02
23-Dec-12	154	4.6	159	154	1.03
24-Dec-12	168	5.4	173	168	1.03
25-Dec-12	167	1.9	169	167	1.01
26-Dec-12	188	2.7	191	188	1.01
27-Dec-12	120	2.3	122	120	1.02
28-Dec-12	133	3.8	137	133	1.03
29-Dec-12	121	2.7	124	121	1.02
30-Dec-12	125	1.3	126	125	1.01
31-Dec-12	129	1.5	131	129	1.01
Averages	152	3	156	153	1

**Quarterly Injection/Return Flow Balances  
Cavity 1060**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	shut in	shut in	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in	shut in	shut in
3-Oct-12	300	5.0	305	237	1.29
4-Oct-12	340	4.2	344	288	1.20
5-Oct-12	313	0.0	313	301	1.04
6-Oct-12	354	0.0	354	321	1.10
7-Oct-12	333	0.0	333	320	1.04
8-Oct-12	319	5.3	324	295	1.10
9-Oct-12	292	2.8	295	273	1.08
10-Oct-12	285	6.4	291	296	0.98
11-Oct-12	299	5.9	305	279	1.09
12-Oct-12	285	2.9	288	286	1.01
13-Oct-12	278	3.0	281	288	0.98
14-Oct-12	271	4.7	276	279	0.99
15-Oct-12	299	5.1	304	284	1.07
16-Oct-12	264	5.3	269	274	0.98
17-Oct-12	271	1.5	273	280	0.97
18-Oct-12	271	5.3	276	306	0.90
19-Oct-12	278	5.0	283	238	1.19
20-Oct-12	271	0.0	271	272	1.00
21-Oct-12	278	5.0	283	294	0.96
22-Oct-12	271	0.0	271	275	0.99
23-Oct-12	278	6.2	284	272	1.04
24-Oct-12	278	5.2	283	270	1.05
25-Oct-12	236	5.3	241	246	0.98
26-Oct-12	278	5.5	284	271	1.05
27-Oct-12	271	5.2	276	269	1.03
28-Oct-12	264	5.3	269	275	0.98
29-Oct-12	257	5.1	262	256	1.02
30-Oct-12	236	4.3	240	230	1.04
31-Oct-12	243	4.0	247	269	0.92
1-Nov-12	222	3.4	225	241	0.94
2-Nov-12	222	5.1	227	245	0.93
3-Nov-12	264	4.8	269	270	1.00
4-Nov-12	257	5.5	263	257	1.02
5-Nov-12	257	5.9	263	271	0.97
6-Nov-12	257	5.7	263	261	1.01
7-Nov-12	250	5.7	256	254	1.01
8-Nov-12	257	5.8	263	258	1.02
9-Nov-12	250	5.0	255	278	0.92
10-Nov-12	257	4.0	261	269	0.97
11-Nov-12	271	4.0	275	276	1.00
12-Nov-12	264	0.0	264	278	0.95
13-Nov-12	257	4.3	261	277	0.94
14-Nov-12	250	4.6	255	275	0.93

**Quarterly Injection/Return Flow Balances**  
**Cavity 1060**

15-Nov-12	243	5.0	248	273	0.91
16-Nov-12	250	5.4	255	279	0.92
17-Nov-12	250	5.3	255	275	0.93
18-Nov-12	236	5.4	241	255	0.95
19-Nov-12	194	5.9	200	234	0.85
20-Nov-12	215	4.4	219	237	0.93
21-Nov-12	222	3.6	226	232	0.97
22-Nov-12	215	3.1	218	233	0.94
23-Nov-12	201	4.0	205	225	0.91
24-Nov-12	194	3.1	197	214	0.92
25-Nov-12	201	2.8	204	212	0.96
26-Nov-12	194	2.4	196	208	0.94
27-Nov-12	194	2.2	196	209	0.94
28-Nov-12	167	4.2	171	197	0.87
29-Nov-12	188	6.0	194	196	0.99
30-Nov-12	0	7.5	8	132	0.06
1-Dec-12	shut in	shut in	shut in	shut in	shut in
2-Dec-12	shut in	shut in	shut in	shut in	shut in
3-Dec-12	shut in	shut in	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in	shut in	shut in
5-Dec-12	shut in	shut in	shut in	shut in	shut in
6-Dec-12	shut in	shut in	shut in	shut in	shut in
7-Dec-12	shut in	shut in	shut in	shut in	shut in
8-Dec-12	shut in	shut in	shut in	shut in	shut in
9-Dec-12	shut in	shut in	shut in	shut in	shut in
10-Dec-12	shut in	shut in	shut in	shut in	shut in
11-Dec-12	shut in	shut in	shut in	shut in	shut in
12-Dec-12	shut in	shut in	shut in	shut in	shut in
13-Dec-12	shut in	shut in	shut in	shut in	shut in
14-Dec-12	shut in	shut in	shut in	shut in	shut in
15-Dec-12	shut in	shut in	shut in	shut in	shut in
16-Dec-12	shut in	shut in	shut in	shut in	shut in
17-Dec-12	shut in	shut in	shut in	shut in	shut in
18-Dec-12	shut in	shut in	shut in	shut in	shut in
19-Dec-12	shut in	shut in	shut in	shut in	shut in
20-Dec-12	shut in	shut in	shut in	shut in	shut in
21-Dec-12	shut in	shut in	shut in	shut in	shut in
22-Dec-12	shut in	shut in	shut in	shut in	shut in
23-Dec-12	shut in	shut in	shut in	shut in	shut in
24-Dec-12	shut in	shut in	shut in	shut in	shut in
25-Dec-12	shut in	shut in	shut in	shut in	shut in
26-Dec-12	shut in	shut in	shut in	shut in	shut in
27-Dec-12	278	5.7	284	321	0.88
28-Dec-12	264	0.0	264	295	0.89
29-Dec-12	271	0.0	271	295	0.92
30-Dec-12	278	4.4	282	286	0.99
31-Dec-12	278	4.4	282	286	0.99
Averages	254	4	258	263	1

**Quarterly Injection/Return Flow Balances  
Cavity 2030**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	279	0.0	279	279	1.00
2-Oct-12	277	0.0	277	277	1.00
3-Oct-12	274	0.0	274	274	1.00
4-Oct-12	275	0.0	275	275	1.00
5-Oct-12	286	0.0	286	286	1.00
6-Oct-12	283	0.0	283	283	1.00
7-Oct-12	298	0.0	298	298	1.00
8-Oct-12	261	0.0	261	261	1.00
9-Oct-12	275	0.0	275	275	1.00
10-Oct-12	266	0.0	266	266	1.00
11-Oct-12	287	0.0	287	287	1.00
12-Oct-12	288	0.0	288	288	1.00
13-Oct-12	271	0.0	271	271	1.00
14-Oct-12	270	0.0	270	270	1.00
15-Oct-12	287	0.0	287	287	1.00
16-Oct-12	288	0.0	288	288	1.00
17-Oct-12	285	0.0	285	285	1.00
18-Oct-12	283	0.0	283	283	1.00
19-Oct-12	284	0.0	284	284	1.00
20-Oct-12	270	0.0	270	270	1.00
21-Oct-12	290	0.0	290	290	1.00
22-Oct-12	283	0.0	283	283	1.00
23-Oct-12	272	0.0	272	272	1.00
24-Oct-12	275	0.0	275	275	1.00
25-Oct-12	232	0.0	232	232	1.00
26-Oct-12	250	0.0	250	250	1.00
27-Oct-12	276	0.0	276	276	1.00
28-Oct-12	277	0.0	277	277	1.00
29-Oct-12	285	0.0	285	285	1.00
30-Oct-12	282	0.0	282	282	1.00
31-Oct-12	278	0.0	278	278	1.00
1-Nov-12	277	0.0	277	277	1.00
2-Nov-12	265	0.0	265	265	1.00
3-Nov-12	317	0.0	317	317	1.00
4-Nov-12	307	0.0	307	307	1.00
5-Nov-12	293	0.0	293	293	1.00
6-Nov-12	289	0.0	289	289	1.00
7-Nov-12	306	0.0	306	306	1.00
8-Nov-12	299	0.0	299	299	1.00
9-Nov-12	278	0.0	278	278	1.00
10-Nov-12	290	0.0	290	290	1.00
11-Nov-12	310	0.0	310	310	1.00
12-Nov-12	298	0.0	298	298	1.00
13-Nov-12	301	0.0	301	301	1.00
14-Nov-12	291	0.0	291	291	1.00

**Quarterly Injection/Return Flow Balances**  
**Cavity 2030**

15-Nov-12	300	0.0	300	300	1.00
16-Nov-12	314	0.0	314	314	1.00
17-Nov-12	292	0.0	292	292	1.00
18-Nov-12	294	0.0	294	294	1.00
19-Nov-12	290	0.0	290	290	1.00
20-Nov-12	294	0.0	294	294	1.00
21-Nov-12	284	0.0	284	284	1.00
22-Nov-12	296	0.0	296	296	1.00
23-Nov-12	296	0.0	296	296	1.00
24-Nov-12	289	0.0	289	289	1.00
25-Nov-12	302	0.0	302	302	1.00
26-Nov-12	299	0.0	299	299	1.00
27-Nov-12	292	0.0	292	292	1.00
28-Nov-12	288	0.0	288	288	1.00
29-Nov-12	275	0.0	275	275	1.00
30-Nov-12	271	0.0	271	271	1.00
1-Dec-12	277	0.0	277	277	1.00
2-Dec-12	152	0.0	152	152	1.00
3-Dec-12	shut in	shut in	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in	shut in	shut in
5-Dec-12	46	0.0	46	46	1.00
6-Dec-12	165	0.0	165	165	1.00
7-Dec-12	297	0.0	297	297	1.00
8-Dec-12	274	0.0	274	274	1.00
9-Dec-12	257	0.0	257	257	1.00
10-Dec-12	266	0.0	266	266	1.00
11-Dec-12	263	0.0	263	263	1.00
12-Dec-12	263	0.0	263	263	1.00
13-Dec-12	240	0.0	240	240	1.00
14-Dec-12	291	0.0	291	291	1.00
15-Dec-12	278	0.0	278	278	1.00
16-Dec-12	278	0.0	278	278	1.00
17-Dec-12	274	0.0	274	274	1.00
18-Dec-12	282	0.0	282	282	1.00
19-Dec-12	262	0.0	262	262	1.00
20-Dec-12	269	0.0	269	269	1.00
21-Dec-12	256	0.0	256	256	1.00
22-Dec-12	262	0.0	262	262	1.00
23-Dec-12	250	0.0	250	250	1.00
24-Dec-12	237	0.0	237	237	1.00
25-Dec-12	73	0.0	73	73	1.00
26-Dec-12	261	0.0	261	261	1.00
27-Dec-12	270	0.0	270	270	1.00
28-Dec-12	242	0.0	242	242	1.00
29-Dec-12	259	0.0	259	259	1.00
30-Dec-12	275	0.0	275	275	1.00
31-Dec-12	267	0.0	267	267	1.00
Averages	272	0.0	272	272	1.00



**Quarterly Injection/Return Flow Balances  
Cavity 2040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	shut in	shut in	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in	shut in	shut in
31-Oct-12	shut in	shut in	shut in	shut in	shut in
1-Nov-12	shut in	shut in	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in	shut in	shut in

## Cavity 2040

[illegible]

**Quarterly Injection/Return Flow Balances  
Cavity 2061**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	112	0.0	112	112	1.00
2-Oct-12	113	0.0	113	113	1.00
3-Oct-12	89	0.0	89	89	1.00
4-Oct-12	145	0.0	145	145	1.00
5-Oct-12	135	0.0	135	135	1.00
6-Oct-12	140	0.0	140	140	1.00
7-Oct-12	123	0.0	123	123	1.00
8-Oct-12	141	0.0	141	141	1.00
9-Oct-12	124	0.0	124	124	1.00
10-Oct-12	142	0.0	142	142	1.00
11-Oct-12	117	0.0	117	117	1.00
12-Oct-12	111	0.0	111	111	1.00
13-Oct-12	110	0.0	110	110	1.00
14-Oct-12	108	0.0	108	108	1.00
15-Oct-12	105	0.0	105	105	1.00
16-Oct-12	115	0.0	115	115	1.00
17-Oct-12	105	0.0	105	105	1.00
18-Oct-12	113	0.0	113	113	1.00
19-Oct-12	129	0.0	129	129	1.00
20-Oct-12	120	0.0	120	120	1.00
21-Oct-12	116	0.0	116	116	1.00
22-Oct-12	113	0.0	113	113	1.00
23-Oct-12	108	0.0	108	108	1.00
24-Oct-12	96	0.0	96	96	1.00
25-Oct-12	84	0.0	84	84	1.00
26-Oct-12	112	0.0	112	112	1.00
27-Oct-12	113	0.0	113	113	1.00
28-Oct-12	92	0.0	92	92	1.00
29-Oct-12	103	0.0	103	103	1.00
30-Oct-12	115	0.0	115	115	1.00
31-Oct-12	108	0.0	108	108	1.00
1-Nov-12	121	0.0	121	121	1.00
2-Nov-12	118	0.0	118	118	1.00
3-Nov-12	132	0.0	132	132	1.00
4-Nov-12	130	0.0	130	130	1.00
5-Nov-12	155	0.0	155	155	1.00
6-Nov-12	149	0.0	149	149	1.00
7-Nov-12	126	0.0	126	126	1.00
8-Nov-12	132	0.0	132	132	1.00
9-Nov-12	132	0.0	132	132	1.00
10-Nov-12	116	0.0	116	116	1.00
11-Nov-12	121	0.0	121	121	1.00
12-Nov-12	121	0.0	121	121	1.00
13-Nov-12	131	0.0	131	131	1.00
14-Nov-12	134	0.0	134	134	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2061**

15-Nov-12	120	0.0	120	120	1.00
16-Nov-12	124	0.0	124	124	1.00
17-Nov-12	139	0.0	139	139	1.00
18-Nov-12	131	0.0	131	131	1.00
19-Nov-12	119	0.0	119	119	1.00
20-Nov-12	122	0.0	122	122	1.00
21-Nov-12	120	0.0	120	120	1.00
22-Nov-12	132	0.0	132	132	1.00
23-Nov-12	138	0.0	138	138	1.00
24-Nov-12	128	0.0	128	128	1.00
25-Nov-12	111	0.0	111	111	1.00
26-Nov-12	119	0.0	119	119	1.00
27-Nov-12	120	0.0	120	120	1.00
28-Nov-12	99	0.0	99	99	1.00
29-Nov-12	132	0.0	132	132	1.00
30-Nov-12	91	0.0	91	91	1.00
1-Dec-12	85	0.0	85	85	1.00
2-Dec-12	71	0.0	71	71	1.00
3-Dec-12	shut in	shut in	shut in	shut in	shut in
4-Dec-12	shut in	shut in	shut in	shut in	shut in
5-Dec-12	35	0.0	35	35	1.00
6-Dec-12	108	0.0	108	108	1.00
7-Dec-12	96	0.0	96	96	1.00
8-Dec-12	62	0.0	62	62	1.00
9-Dec-12	57	0.0	57	57	1.00
10-Dec-12	74	0.0	74	74	1.00
11-Dec-12	83	0.0	83	83	1.00
12-Dec-12	106	0.0	106	106	1.00
13-Dec-12	109	0.0	109	109	1.00
14-Dec-12	80	0.0	80	80	1.00
15-Dec-12	90	0.0	90	90	1.00
16-Dec-12	75	0.0	75	75	1.00
17-Dec-12	81	0.0	81	81	1.00
18-Dec-12	92	0.0	92	92	1.00
19-Dec-12	101	0.0	101	101	1.00
20-Dec-12	80	0.0	80	80	1.00
21-Dec-12	94	0.0	94	94	1.00
22-Dec-12	102	0.0	102	102	1.00
23-Dec-12	121	0.0	121	121	1.00
24-Dec-12	112	0.0	112	112	1.00
25-Dec-12	123	0.0	123	123	1.00
26-Dec-12	141	0.0	141	141	1.00
27-Dec-12	156	0.0	156	156	1.00
28-Dec-12	160	0.0	160	160	1.00
29-Dec-12	128	0.0	128	128	1.00
30-Dec-12	112	0.0	112	112	1.00
31-Dec-12	110	0.0	110	110	1.00
Averages	113	0.0	113	113	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2062**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Oct-12	shut in	shut in	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in	shut in	shut in
31-Oct-12	shut in	shut in	shut in	shut in	shut in
1-Nov-12	shut in	shut in	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in	shut in	shut in

## Cavity 2062

[illegible]



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639  
www.mosaicco.com

Tel 231-832-8800

## 2012 Monitor Well Results – 4<sup>th</sup> Quarter Cluster 1

Date	Well Number	Chloride Concentration (mg/L)
December 2012	Cluster 1 M.W. 01	460.9
December 2012	Cluster 1 M.W. 02	678.9
December 2012	Cluster 1 M.W. 03	40.8
December 2012	Cluster 1 M.W. 04	2162.6
December 2012	Cluster 1 M.W. 05	638.2
December 2012	Cluster 1 M.W. 06	177.3
December 2012	Cluster 1 M.W. 07	455.6
December 2012	Cluster 1 M.W. 08	517.6
December 2012	Cluster 1 M.W. 09	7675.6
December 2012	Cluster 1 M.W. 10	4573.4
December 2012	Cluster 1 M.W. 11	569
December 2012	Cluster 1 M.W. 12	301.4
December 2012	Cluster 1 M.W. 13	3190.8
December 2012	Cluster 1 M.W. 14	234
December 2012	Cluster 1 M.W. 34	2995.8
December 2012	Cluster 1 M.W. 35	136.5
December 2012	Cluster 1 M.W. 36	31.9
December 2012	Cluster 1 M.W. 37	1772.7
December 2012	Cluster 1 M.W. 38	33.7
December 2012	Cluster 1 M.W. 39	16
December 2012	Cluster 1 M.W. 40	241.1



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639  
www.mosaicco.com

Tel 231-832-8800

## 2012 Monitor Well Results – 4<sup>th</sup> Quarter Cluster 2

Date	Well Number	Chloride Concentration (mg/L)
December 2012	Cluster 2 M.W. 01	115.2
December 2012	Cluster 2 M.W. 02	Dry well
December 2012	Cluster 2 M.W. 04	65.6
December 2012	Cluster 2 M.W. 05	152.4
December 2012	Cluster 2 M.W. 06	24.8
December 2012	Cluster 2 M.W. 10	Dry well
December 2012	Cluster 2 M.W. 33	55.0



MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED TIME SAMPLED SAMPLE # SAMPLER NAME/SIGNATURE

12-11-12 10:00 A.M. 1 (PP-1) Antimo Petito  
12-11-12 10:15 A.M. 2 (PP-2) Antimo Petito  
12-11-12 10:35 A.M. 3 (PP-3) Antimo Petito  
12-11-12 10:45 A.M. 4 (W-126-1) Antimo Petito  
12-11-12 11:05 A.M. 5 (W-126-2) Antimo Petito  
12-11-12 11:10 A.M. 6 (CL2-1) Antimo Petito  
12-11-12 11:30 A.M. 7 (CL2-5) Antimo Petito  
12-11-12 11:40 A.M. 8 (CL2-6) Antimo Petito  
12-11-12 12:00 P.M. 9 (CL2-4) Antimo Petito

Dry Well 10 (CL2-2)

11 (CL1-3)

12 (CL1-6)

13 (CL1-5)

14 (CL1-7)

15 (CL1-1)

16 (CL1-2)

17 (CL1-9)

18 (CL1-11)

19 (CL1-8)

20 (CL1-4)

21 (PW94-2)

22 (PW94-1)

23 (CL1-10)

24 (T-126-1)

25 (CL1-12)

26 (T-126-2)

27 (T-126-3)

28 (T-126-5)

29 (T-126-4)

30 (CL1-13)

31 (CL1-14)

12-11-12 12:10 P.M. 32 (PW-32) Antimo Petito

33 (CL2-33)

34 (CL1-34)

35 (MW-35)

36 (MW-36)

37 (MW-37)

38 (MW-38)

39 (MW-39)

40 (MW-40)

41 (PW-41)

Received in Lab By (Name/Signature)

Allison Vancos Allison Vancos

Date Received

12/11/12

Time Received

12:10PM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (W-126-1)	
		5 (W-126-2)	
		6 (CL2-1)	
		7 (CL2-5)	
		8 (CL2-6)	
		9 (CL2-4)	
Dry Well		10 (CL2-2)	
		11 (CL1-3)	
		12 (CL1-6)	
		13 (CL1-5)	
		14 (CL1-7)	
		15 (CL1-1)	
		16 (CL1-2)	
		17 (CL1-9)	
		18 (CL1-11)	
		19 (CL1-8)	
		20 (CL1-4)	
		21 (PW94-2)	
12-13-12	9:25 AM	22 (PW94-1)	Antimo Petito
		23 (CL1-10)	
		24 (T-126-1)	
12-13-12	9:00 AM	25 (CL1-12)	Antimo Petito
		26 (T-126-2)	
		27 (T-126-3)	
		28 (T-126-5)	
		29 (T-126-4)	
12-13-12	9:45 AM	30 (CL1-13)	Antimo Petito
		31 (CL1-14)	
		32 (PW-32)	
		33 (CL2-33)	
12-13-12	8:40 AM	34 (CL1-34)	Antimo Petito
		35 (MW-35)	
12-13-12	9:15 AM	36 (MW-36)	Antimo Petito
12-13-12	10:50 AM	37 (MW-37)	Antimo Petito
12-13-12	10:05 AM	38 (MW-38)	Antimo Petito
12-13-12	10:05 AM	39 (MW-39)	Antimo Petito
12-13-12	10:30 AM	40 (MW-40)	Antimo Petito
		41 (PW-41)	

Received in Lab By (Name/Signature)

Allison Vanot Allison Vanot

Date Received

12/13/12

Time Received

11:15 AM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (W-126-1)	
		5 (W-126-2)	
		6 (CL2-1)	
		7 (CL2-5)	
		8 (CL2-6)	
		9 (CL2-4)	
		10 (CL2-2)	
		11 (CL1-3)	
		12 (CL1-6)	
		13 (CL1-5)	
		14 (CL1-7)	
		15 (CL1-1)	
		16 (CL1-2)	
		17 (CL1-9)	
12-12-12	1:30 PM	18 (CL1-11)	Antonia Petito
		19 (CL1-8)	
		20 (CL1-4)	
12-12-12	1:15 PM	21 (PW94-2)	Antonia Petito
		22 (PW94-1)	
		23 (CL1-10)	
		24 (T-126-1)	
		25 (CL1-12)	
		26 (T-126-2)	
		27 (T-126-3)	
12-12-12	1:50 PM	28 (T-126-5)	Antonia Petito
12-12-12	1:05 PM	29 (T-126-4)	Antonia Petito
		30 (CL1-13)	
		31 (CL1-14)	
		32 (PW-32)	
		33 (CL2-33)	
		34 (CL1-34)	
12-12-12	1:45 PM	35 (MW-36)	Antonia Petito
		36 (MW-36)	
		37 (MW-37)	
		38 (MW-38)	
		39 (MW-39)	
		40 (MW-40)	
12-12-12	1:25 PM	41 (PW-41)	Antonia Petito

Received in Lab By (Name/Signature)

1:55 pm Brian Heminger Jr. *BH*

Date Received

12/12/12

Time Received

*JP*

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (WV-126-1)	
		5 (WV-126-2)	
		6 (CL2-1)	
		7 (CL2-5)	
		8 (CL2-6)	
		9 (CL2-4)	
		10 (CL2-2)	
		Dry Well	
12-12-12	10:05 AM	11 (CL1-3)	Antonia Petito
12-12-12	10:25 AM	12 (CL1-6)	Antonia Petito
* 12-12-12	10:30 AM	13 (CL1-5)	Antonia Petito
12-12-12	10:50 AM	14 (CL1-7)	Antonia Petito
* 12-12-12	10:45 AM	15 (CL1-1)	Antonia Petito
12-12-12	11:00 AM	16 (CL1-2)	Antonia Petito
12-12-12	11:20 AM	17 (CL1-9)	Antonia Petito
		18 (CL1-11)	
12-12-12	11:40 AM	19 (CL1-8)	Antonia Petito
12-12-12	11:55 AM	20 (CL1-4)	Antonia Petito
		21 (PW94-2)	
		22 (PW94-1)	
12-12-12	11:33 AM	23 (CL1-10)	Antonia Petito
* 12-12-12	11:30 AM	24 (T-126-1)	Antonia Petito
		25 (CL1-12)	
12-12-12	11:30 AM	26 (T-126-2)	Antonia Petito
12-12-12	12:05 PM	27 (T-126-3)	Antonia Petito
		28 (T-126-5)	
		29 (T-126-4)	
		30 (CL1-13)	
12-12-12	10:00 AM	31 (CL1-14)	Antonia Petito
		32 (PW-32)	
12-12-12	9:45 AM	33 (CL2-33)	Antonia Petito
		34 (CL1-34)	
		35 (MW-35)	
		36 (MW-36)	
		37 (MW-37)	
		38 (MW-38)	
		39 (MW-39)	
		40 (MW-40)	
		41 (PW-41)	

Received in Lab By (Name/Signature)

12:10 pm Brian Heminger Jr. *~ ~ ~*

Date Received

12/12/12 *of V*

Time Received

\* Note: Needs Repair



December 27, 2012

Mosaic Potash - Hersey  
Attn: Ms. Allison VanOs  
1395 - 135th Avenue  
Hersey, MI 49639

**Project: Quarterly Monitoring of Inorganic Pollutants**

Dear Ms. Allison VanOs,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

<b>Work Order</b>	<b>Received</b>	<b>Description</b>
1212202	12/12/2012	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#12-056-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#002841); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#03068); Michigan DPH (#0034); Minnesota DPH (#367345); New York ELAP (#46503); North Carolina DNRE (#659); Texas CEQ (#T104704495-12-2); Virginia DCLS (#1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-09-00163).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Jennifer L. Rice". The signature is fluid and cursive, written over a few lines.

Jennifer L. Rice  
Project Chemist



## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: Quarterly Monitoring of Inorganic Pollutants  
Client Sample ID: **Disposal**  
Lab Sample ID: **1212202-01**  
Matrix: Water

Work Order: **1212202**  
Description: Laboratory Services  
Sampled: 12/11/12 08:55  
Sampled By: A.V.  
Received: 12/12/12 10:00

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
<b>Barium</b>	<b>94</b>	50	ug/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465
<b>Calcium</b>	<b>460</b>	50	mg/L	100	USEPA-6010C	12/19/12 11:22	KLV	1215465
*Cobalt	<50	50	ug/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465
*Copper	<50	50	ug/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465
<b>Iron</b>	<b>3200</b>	250	ug/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465
*Lead	<250	250	ug/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465
<b>Magnesium</b>	<b>77</b>	2.5	mg/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465
<b>Manganese</b>	<b>160</b>	50	ug/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465
*Selenium	<5.0	5.0	ug/L	5	USEPA-6020A	12/24/12 11:09	CKD	1215467
<b>Sodium</b>	<b>23000</b>	50	mg/L	100	USEPA-6010C	12/19/12 11:22	KLV	1215465
*Zinc	<100	100	ug/L	5	USEPA-6010C	12/19/12 12:40	KLV	1215465

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JAN 22 2013

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\*See Statement of Data Qualifications

Page 2 of 10

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## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: **Quarterly Monitoring of Inorganic Pollutants**  
Client Sample ID: **Disposal**  
Lab Sample ID: **1212202-01**  
Matrix: **Water**

Work Order: **1212202**  
Description: **Laboratory Services**  
Sampled: **12/11/12 08:55**  
Sampled By: **A.V.**  
Received: **12/12/12 10:00**

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	95	20	mg/L	1	SM 2320 B 20th	12/17/12 13:30	SKA	1215419
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B 20th	12/17/12 13:30	SKA	1215420
Alkalinity, Total	95	20	mg/L	1	SM 2320 B 20th	12/17/12 13:30	SKA	1215421
Bromide	310	300	mg/L	100	ASTM D 1246-95 (99)	12/26/12 11:30	KAR	1215789
Chloride	45000	500	mg/L	500	SM 4500-Cl E 20th	12/21/12 09:59	LMA	1215651
Conductivity @ 25° C	111300	5	umhos/cm	1	SM 2510 B 20th	12/13/12 10:43	HLB	1215309
*pH	7.0	1.0	pH Units	1	SM 4500-H B 20th	12/13/12 12:50	SKA	1215321
*Oxidation/Reduction Potential	142	1	mV	1	ASTM D 1498-76	12/14/12 09:10	LMA	1215370
Sulfate	770	120	mg/L	25	ASTM D516-90 (02)	12/13/12 12:11	LMA	1215349
Residue, Dissolved @ 180° C	87200	2500	mg/L	1	SM 2540 C 20th	12/13/12 16:00	WAH	1215341
Specific Gravity	1.0686	0.7000	@ 60 °F	1	ASTM D 1429-79	12/13/12 14:10	HLB	1215331
Carbon, Total Organic	<1.0	1.0	mg/L	1	SM 5310 C 20th	12/24/12 15:32	KAR	1215794
Sulfide, Total	16	1.0	mg/L	1	SM 4500-S2 F 20th	12/18/12 15:00	KAR	1215743

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## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: Quarterly Monitoring of Inorganic Pollutants  
Client Sample ID: **Recycle**  
Lab Sample ID: **1212202-02**  
Matrix: Water

Work Order: **1212202**  
Description: Laboratory Services  
Sampled: 12/11/12 08:45  
Sampled By: A.V.  
Received: 12/12/12 10:00

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Barium	280	100	ug/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465
Calcium	1400	250	mg/L	500	USEPA-6010C	12/19/12 11:26	KLV	1215465
*Cobalt	<100	100	ug/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465
*Copper	<100	100	ug/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465
Iron	1200	500	ug/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465
*Lead	<500	500	ug/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465
Magnesium	110	5.0	mg/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465
Manganese	210	100	ug/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465
*Selenium	<200	200	ug/L	200	USEPA-6020A	12/24/12 11:24	CKD	1215467
Sodium	95000	250	mg/L	500	USEPA-6010C	12/19/12 11:26	KLV	1215465
*Zinc	<200	200	ug/L	10	USEPA-6010C	12/19/12 12:44	KLV	1215465

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## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey** Work Order: **1212202**  
Project: Quarterly Monitoring of Inorganic Pollutants Description: Laboratory Services  
Client Sample ID: **Recycle** Sampled: 12/11/12 08:45  
Lab Sample ID: **1212202-02** Sampled By: A.V.  
Matrix: Water Received: 12/12/12 10:00

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	40	20	mg/L	1	SM 2320 B 20th	12/17/12 13:30	SKA	1215419
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B 20th	12/17/12 13:30	SKA	1215420
Bromide	920	600	mg/L	200	ASTM D 1246-95 (99)	12/26/12 11:30	KAR	1215789
Conductivity @ 25° C	213200	5	umhos/cm	1	SM 2510 B 20th	12/13/12 10:43	HLB	1215309
Sulfate	2500	500	mg/L	100	ASTM 0516-90 (02)	12/13/12 10:53	LMA	1215349
Alkalinity, Total	40	20	mg/L	1	SM 2320 B 20th	12/17/12 13:30	SKA	1215421
Chloride	170000	2500	mg/L	2500	SM 4500-Cl E 20th	12/21/12 09:59	LMA	1215651
*pH	6.7	1.0	pH Units	1	SM 4500-H B 20th	12/13/12 12:50	SKA	1215321
Residue, Dissolved @ 180° C	311000	5000	mg/L	1	SM 2540 C 20th	12/13/12 16:00	WAH	1215341
*Oxidation/Reduction Potential	106	1	mV	1	ASTM D 1498-76	12/14/12 09:10	LMA	1215370
Specific Gravity	1.2128	0.7000	@ 60 °F	1	ASTM D 1429-79	12/13/12 14:10	HLB	1215331
Carbon, Total Organic	<1.0	1.0	mg/L	1	SM 5310 C 20th	12/24/12 15:43	KAR	1215794
Sulfide, Total	3.2	1.0	mg/L	1	SM 4500-S2 F 20th	12/18/12 15:00	KAR	1215743

\*See Statement of Data Qualifications

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## STATEMENT OF DATA QUALIFICATIONS

### Total Metals by EPA 6000/7000 Series Methods

**Qualification:** The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-6010C

Sample/Analyte:	1212202-01	Disposal	Cobalt
	1212202-01	Disposal	Copper
	1212202-01	Disposal	Lead
	1212202-01	Disposal	Zinc
	1212202-02	Recycle	Cobalt
	1212202-02	Recycle	Copper
	1212202-02	Recycle	Lead
	1212202-02	Recycle	Zinc

Analysis: USEPA-6020A

Sample/Analyte:	1212202-01	Disposal	Selenium
	1212202-02	Recycle	Selenium



## STATEMENT OF DATA QUALIFICATIONS

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

**Qualification:** The referenced method requires analysis occur immediately after sample collection. Because analysis was not performed in the field, the reported result must be considered estimated.

Analysis: ASTM D 1498-76

Sample/Analyte:	1212202-01	Disposal	Oxidation/Reduction Potential
	1212202-02	Recycle	Oxidation/Reduction Potential

Analysis: SM 4500-H B 20th

Sample/Analyte:	1212202-01	Disposal	pH
	1212202-02	Recycle	pH

**Qualification:** The following reported test methods and analyte(s) are exceptions to our NELAP Fields of Accreditation, or for which accreditation is not required, applicable, or available.

Analysis: ASTM D 1429-79

Analyte(s): Specific Gravity

Analysis: ASTM D 1498-76

Analyte(s): Oxidation/Reduction Potential


**TRIMATRIX**  
 LABORATORIES

 5560 Corporate Exchange Court SE  
 Grand Rapids, MI 49512

 Phone (616) 975-4500 Fax (616) 942-7463  
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# Chain of Custody Record

 C/C No. **142856**

Analyses Requested

Pg. 8 of 10


For Lab Use Only Lab No. <b>3</b> Project Log No. <b>5-11</b> Project Number <b>2112112</b>		Client Name <b>Mosaic Potash</b> Address <b>1345 135th Ave</b> City, State, Zip <b>Wyand, MI 49639</b> Phone <b>248-832-9837</b> Email <b>allison.vandor@mosaicusa.com</b>		Project Name <b>Quarterly Monitoring</b> Client Project No. / P.O. No. <b>29392</b> Invoice To <input type="checkbox"/> Client <input type="checkbox"/> Other (specify)	
Sample ID <b>01</b> Field Sample ID <b>01</b>		Sample Date <b>12/11/12</b> Sample Time <b>8:55A</b>		Number of Containers Submitted <b>3</b>	
Sample Description <b>Recycle</b>		Sample Location <b>01</b>		Sample Container <b>PINK</b>	
Sample ID <b>02</b>		Sample Date <b>12/11/12</b> Sample Time <b>8:55A</b>		Number of Containers Submitted <b>1</b>	
Sample Description <b>Recycle</b>		Sample Location <b>02</b>		Sample Container <b>PINK</b>	
Sample ID <b>03</b>		Sample Date <b>12/11/12</b> Sample Time <b>8:55A</b>		Number of Containers Submitted <b>1</b>	
Sample Description <b>Recycle</b>		Sample Location <b>03</b>		Sample Container <b>PINK</b>	

WHITE COPY - REPORT

YELLOW COPY - LABORATORY

PINK COPY - FIELD

## SAMPLE RECEIVING / LOG-IN CHECKLIST

 <b>TRIMATRIX</b> LABORATORIES		Client: <u>Mosaic Potash</u>		Work Order #: <u>1212202</u>	
		Receipt Record Page Log #: <u>5-11</u>		Store / Add To: _____ Project Chemist: _____ Sample #: _____	

Recorded by (Initials/Date): <u>LA 12/12/12</u>		<input checked="" type="checkbox"/> Cooler <input type="checkbox"/> Box <input type="checkbox"/> Other: _____	Qty Received: <u>1</u>	<input checked="" type="checkbox"/> IR Gun (#202) Thermometer Used: <input type="checkbox"/> Digital Thermometer (#54) <input type="checkbox"/> See Additional Cooler Information Form <input type="checkbox"/> Other (#): _____
---	--	---	------------------------	--

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time
<u>0620</u>	<u>1058</u>						
<b>Custody Seals:</b> <input checked="" type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact		<b>Custody Seals:</b> <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact		<b>Custody Seals:</b> <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact		<b>Custody Seals:</b> <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact	
<b>Coolant Location:</b> Dispersed / Top / Middle / Bottom		<b>Coolant Location:</b> Dispersed / Top / Middle / Bottom		<b>Coolant Location:</b> Dispersed / Top / Middle / Bottom		<b>Coolant Location:</b> Dispersed / Top / Middle / Bottom	
<b>Coolant/Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input checked="" type="checkbox"/> None / Avg 2-3 containers		<b>Coolant/Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers		<b>Coolant/Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers		<b>Coolant/Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers	
<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container		<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container		<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container		<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container	
Recorded °C	Correction Factor °C	Actual °C	Recorded °C	Correction Factor °C	Actual °C	Recorded °C	Correction Factor °C
Temp Blank:			Temp Blank:			Temp Blank:	
TB location: Representative / Not Representative:			TB location: Representative / Not Representative:			TB location: Representative / Not Representative:	
1	15.2	15.2	1			1	
2	15.2	15.2	2			2	
3	16.2	16.2	3			3	
Average °C			Average °C			Average °C	
<input checked="" type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?			<input type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?			<input type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?	

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

<b>Paperwork Received</b> Yes: <input checked="" type="checkbox"/> Chain of Custody record(s)? If No, Initiated By: _____ Received for Lab Signed/Date/Time: _____ <input type="checkbox"/> Shipping document? <input type="checkbox"/> Other: _____	<b>Check Sample Preservation</b> N/A: <input checked="" type="checkbox"/> Average sample temperature <5° C? <input type="checkbox"/> Was thermal preservation required? If "No", Project Chemist Approval Initials: _____ If "Yes", Completed Non-Con Cooler - Cont Inventory Form? <input checked="" type="checkbox"/> Completed Sample Preservation Verification Form? <input type="checkbox"/> Samples chemically preserved correctly? If "No", added orange tag? <input checked="" type="checkbox"/> Received pre-preserved VOC salts? <input type="checkbox"/> MeOH <input type="checkbox"/> Na <sub>2</sub> SO <sub>4</sub>
<b>COC Information</b> <input checked="" type="checkbox"/> Trimatrix COC <input type="checkbox"/> Other: <u>142856</u> COC ID Numbers: _____	

<b>Check COC for Accuracy</b> Yes: <input checked="" type="checkbox"/> Analysis Requested? <input checked="" type="checkbox"/> Sample ID matches COC? <input checked="" type="checkbox"/> Sample Date and Time matches COC? <input checked="" type="checkbox"/> Container type completed on COC? <input checked="" type="checkbox"/> All container types indicated are received?	<b>Check for Short Hold-Time Prep/Analyses</b> <input type="checkbox"/> Bacteriological <input type="checkbox"/> Air Bags <input type="checkbox"/> EnCores / Methanol Pre-Preserved <input type="checkbox"/> Formaldehyde/Aldehyde <input checked="" type="checkbox"/> Green-tagged containers <input type="checkbox"/> Yellow/White-tagged HL ambians (SV Prep-Lab)
---	--

<b>Sample Condition Summary</b> N/A: <input checked="" type="checkbox"/> Broken containers/lids? <input checked="" type="checkbox"/> Missing or incomplete labels? <input checked="" type="checkbox"/> Illegible information on labels? <input checked="" type="checkbox"/> Low volume received? <input checked="" type="checkbox"/> Inappropriate or non-Trimatrix containers received? <input type="checkbox"/> VOC vials / TGC containers have headspace? <input type="checkbox"/> Extra sample locations / containers not listed on COC?	<b>Notes:</b> <input type="checkbox"/> Trip Blank received <input type="checkbox"/> Trip Blank not listed on COC Cooler Received (Date/Time): <u>12/12/12 10:00</u> Paperwork Delivered (Date/Time): <u>12/12/12 11:03</u> 5:1 Hour Goal Met? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
---	---

Client: <u>Mosaic Potash</u>	Work Order #: <u>1212202</u>
Reactor Log #: <u>5-11</u>	Completed By (initials/date): <u>SA 12/12/12</u>
Project Chemical:	

COC ID #: <u>142856</u>				Adjusted by: _____ Date: _____		DO NOT ADJUST pH FOR THESE CONTAINER TYPES		
Container Type	5 / 23	4	13	3	6	15		
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe		
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>	None	HNO <sub>3</sub>	HNO <sub>3</sub>		
Expected pH	>12	<2	<2	6-8	<2	<2		
COC Line #1								
COC Line #2								
COC Line #3				✓				
COC Line #4					✓			
COC Line #5								
COC Line #6								
COC Line #7				✓				
COC Line #8					✓			
COC Line #9								
COC Line #10								

Ph Strip Lot #	<u>HC137671</u>
<input checked="" type="checkbox"/>	
<input type="checkbox"/>	

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #				Adjusted by: _____ Date: _____		DO NOT ADJUST pH FOR THESE CONTAINER TYPES		
Container Type	5	4	13	3	6	15		
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripe		
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>	None	HNO <sub>3</sub>	HNO <sub>3</sub>		
Expected pH	>12	<2	<2	~7	<2	<2		
COC Line #1								
COC Line #2								
COC Line #3								
COC Line #4								
COC Line #5								
COC Line #6								
COC Line #7								
COC Line #8								
COC Line #9								
COC Line #10								

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H <sub>2</sub> SO <sub>4</sub>
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H <sub>2</sub> SO <sub>4</sub>
500	2.5

Comments
----------



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

October 12, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

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Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for September 2012

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During the month of September, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 28 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 29 days this month.
- Cavity KCI 1060 was not in operation for this month.
- Cavity KCI 2030 was in operation for 29 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 29 days this month.
- Cavity KCI 2062 was not in operation for this month.

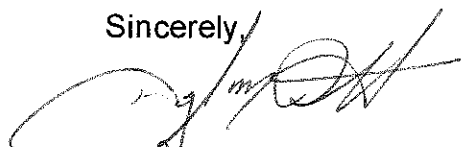
Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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CAVITY 1010

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	shut in	shut in	shut in
2-Sep-12	shut in	shut in	shut in
3-Sep-12	shut in	shut in	shut in
4-Sep-12	shut in	shut in	shut in
5-Sep-12	shut in	shut in	shut in
6-Sep-12	shut in	shut in	shut in
7-Sep-12	shut in	shut in	shut in
8-Sep-12	shut in	shut in	shut in
9-Sep-12	shut in	shut in	shut in
10-Sep-12	shut in	shut in	shut in
11-Sep-12	shut in	shut in	shut in
12-Sep-12	shut in	shut in	shut in
13-Sep-12	shut in	shut in	shut in
14-Sep-12	shut in	shut in	shut in
15-Sep-12	shut in	shut in	shut in
16-Sep-12	shut in	shut in	shut in
17-Sep-12	shut in	shut in	shut in
18-Sep-12	shut in	shut in	shut in
19-Sep-12	shut in	shut in	shut in
20-Sep-12	shut in	shut in	shut in
21-Sep-12	shut in	shut in	shut in
22-Sep-12	shut in	shut in	shut in
23-Sep-12	shut in	shut in	shut in
24-Sep-12	shut in	shut in	shut in
25-Sep-12	shut in	shut in	shut in
26-Sep-12	shut in	shut in	shut in
27-Sep-12	shut in	shut in	shut in
28-Sep-12	shut in	shut in	shut in
29-Sep-12	shut in	shut in	shut in
30-Sep-12	shut in	shut in	shut in

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CAVITY 1020

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## Cavity 1020

## Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	1103	231	276
2-Sep-12	1086	230	278
3-Sep-12	1039	238	295
4-Sep-12	1041	188	112
5-Sep-12	1100	196	251
6-Sep-12	1133	221	221
7-Sep-12	1096	241	250
8-Sep-12	1063	243	305
9-Sep-12	1097	235	290
10-Sep-12	1145	224	283
11-Sep-12	1146	212	289
12-Sep-12	1118	222	316
13-Sep-12	1069	247	309
14-Sep-12	shut in	shut in	shut in
15-Sep-12	1102	331	390
16-Sep-12	1120	299	384
17-Sep-12	1022	312	382
18-Sep-12	1044	291	350
19-Sep-12	1085	263	354
20-Sep-12	shut in	shut in	shut in
21-Sep-12	1020	175	236
22-Sep-12	1023	292	361
23-Sep-12	1025	289	368
24-Sep-12	1105	289	363
25-Sep-12	1143	285	362
26-Sep-12	1134	308	407
27-Sep-12	1097	327	414
28-Sep-12	1161	328	401
29-Sep-12	1083	322	395
30-Sep-12	1149	332	406

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Cavity 1020

Sep-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1091	263	323

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
28-Sep-12	✓ 1161	328

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
21-Sep-12	1020	175

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
30-Sep-12	✓ 332	1149

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## Cavity 1020 Pressures & Flow Rates



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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	shut in	shut in	shut in
2-Sep-12	shut in	shut in	shut in
3-Sep-12	shut in	shut in	shut in
4-Sep-12	shut in	shut in	shut in
5-Sep-12	shut in	shut in	shut in
6-Sep-12	shut in	shut in	shut in
7-Sep-12	shut in	shut in	shut in
8-Sep-12	shut in	shut in	shut in
9-Sep-12	shut in	shut in	shut in
10-Sep-12	shut in	shut in	shut in
11-Sep-12	shut in	shut in	shut in
12-Sep-12	shut in	shut in	shut in
13-Sep-12	shut in	shut in	shut in
14-Sep-12	shut in	shut in	shut in
15-Sep-12	shut in	shut in	shut in
16-Sep-12	shut in	shut in	shut in
17-Sep-12	shut in	shut in	shut in
18-Sep-12	shut in	shut in	shut in
19-Sep-12	shut in	shut in	shut in
20-Sep-12	shut in	shut in	shut in
21-Sep-12	shut in	shut in	shut in
22-Sep-12	shut in	shut in	shut in
23-Sep-12	shut in	shut in	shut in
24-Sep-12	shut in	shut in	shut in
25-Sep-12	shut in	shut in	shut in
26-Sep-12	shut in	shut in	shut in
27-Sep-12	shut in	shut in	shut in
28-Sep-12	shut in	shut in	shut in
29-Sep-12	shut in	shut in	shut in
30-Sep-12	shut in	shut in	shut in

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	1163	157	157
2-Sep-12	1145	144	144
3-Sep-12	1195	178	178
4-Sep-12	1200	172	172
5-Sep-12	1183	203	203
6-Sep-12	1213	199	199
7-Sep-12	1195	178	178
8-Sep-12	1195	170	170
9-Sep-12	1200	176	176
10-Sep-12	1200	192	192
11-Sep-12	1195	186	186
12-Sep-12	1195	172	172
13-Sep-12	1173	144	144
14-Sep-12	shut in	shut in	shut in
15-Sep-12	1200	110	110
16-Sep-12	1163	175	175
17-Sep-12	1188	169	169
18-Sep-12	1183	161	161
19-Sep-12	1133	188	188
20-Sep-12	1083	138	138
21-Sep-12	1180	145	145
22-Sep-12	1190	155	155
23-Sep-12	1190	141	141
24-Sep-12	1170	159	159
25-Sep-12	1160	203	203
26-Sep-12	1175	167	167
27-Sep-12	1200	198	198
28-Sep-12	1183	182	182
29-Sep-12	1150	180	180
30-Sep-12	1175	189	189

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Cavity 1050

Sep-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1178	170	170

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Sep-12	1213	199

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
20-Sep-12	1083	138

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

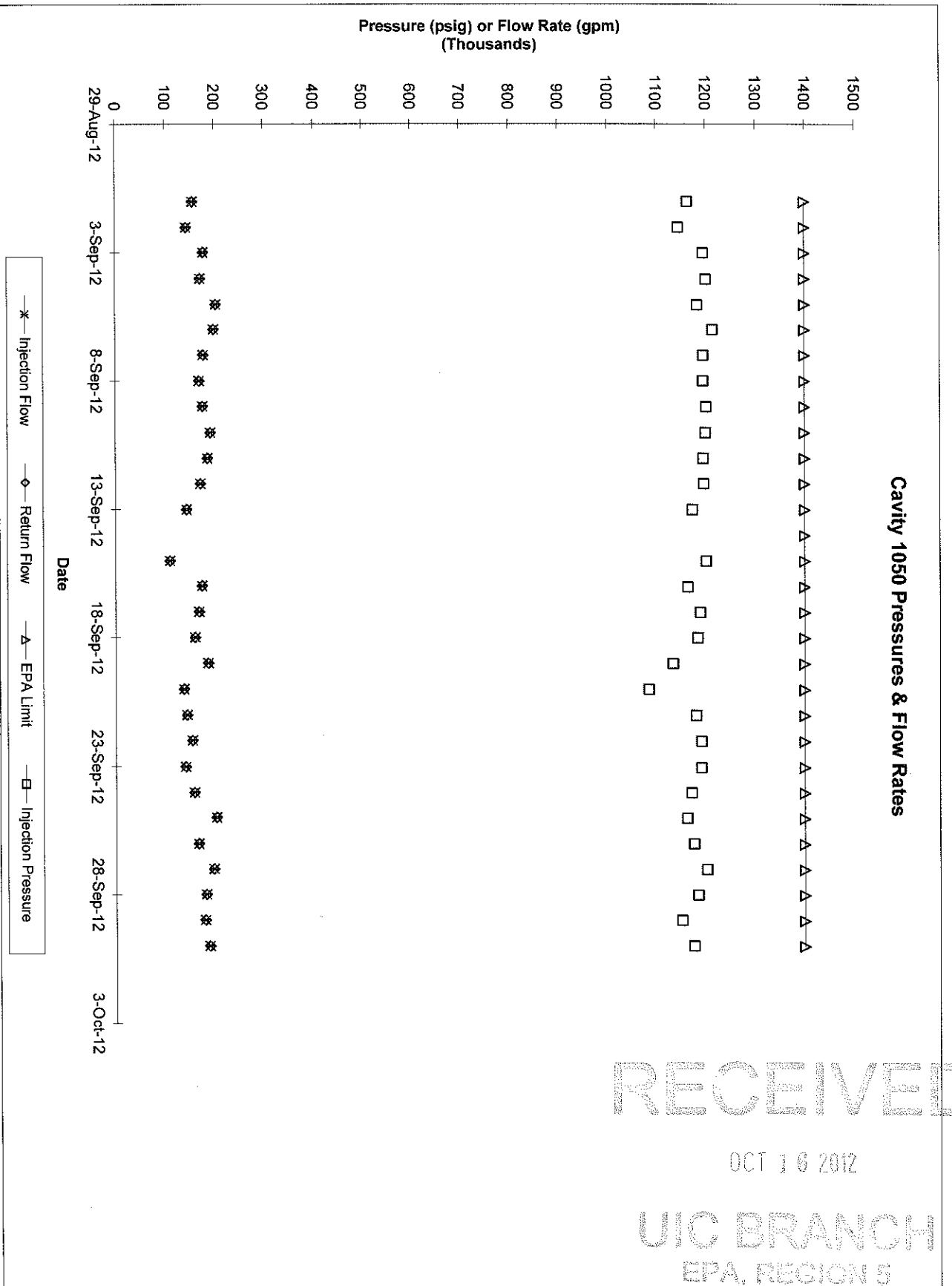
Date	Injection Flow (gpm)	Injection Pressure (psi)
5-Sep-12	203	1183

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# Solution Mining Permit M1-133-3G-A002



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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	shut in	shut in	shut in
2-Sep-12	shut in	shut in	shut in
3-Sep-12	shut in	shut in	shut in
4-Sep-12	shut in	shut in	shut in
5-Sep-12	shut in	shut in	shut in
6-Sep-12	shut in	shut in	shut in
7-Sep-12	shut in	shut in	shut in
8-Sep-12	shut in	shut in	shut in
9-Sep-12	shut in	shut in	shut in
10-Sep-12	shut in	shut in	shut in
11-Sep-12	shut in	shut in	shut in
12-Sep-12	shut in	shut in	shut in
13-Sep-12	shut in	shut in	shut in
14-Sep-12	shut in	shut in	shut in
15-Sep-12	shut in	shut in	shut in
16-Sep-12	shut in	shut in	shut in
17-Sep-12	shut in	shut in	shut in
18-Sep-12	shut in	shut in	shut in
19-Sep-12	shut in	shut in	shut in
20-Sep-12	shut in	shut in	shut in
21-Sep-12	shut in	shut in	shut in
22-Sep-12	shut in	shut in	shut in
23-Sep-12	shut in	shut in	shut in
24-Sep-12	shut in	shut in	shut in
25-Sep-12	shut in	shut in	shut in
26-Sep-12	shut in	shut in	shut in
27-Sep-12	shut in	shut in	shut in
28-Sep-12	shut in	shut in	shut in
29-Sep-12	shut in	shut in	shut in
30-Sep-12	shut in	shut in	shut in

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CAVITY 2030 ✓

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Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	1163	243	243
2-Sep-12	1145	243	243
3-Sep-12	1195	264	264
4-Sep-12	1200	250	250
5-Sep-12	1183	250	250
6-Sep-12	1213	250	250
7-Sep-12	1195	285	285
8-Sep-12	1195	285	285
9-Sep-12	1200	285	285
10-Sep-12	1200	271	271
11-Sep-12	1195	257	257
12-Sep-12	1195	271	271
13-Sep-12	1173	285	285
14-Sep-12	shut in	shut in	shut in
15-Sep-12	1200	257	257
16-Sep-12	1163	315	315
17-Sep-12	1188	265	265
18-Sep-12	1183	268	268
19-Sep-12	1133	260	260
20-Sep-12	1083	261	261
21-Sep-12	1180	227	227
22-Sep-12	1190	284	284
23-Sep-12	1190	267	267
24-Sep-12	1170	268	268
25-Sep-12	1160	273	273
26-Sep-12	1175	265	265
27-Sep-12	1200	284	284
28-Sep-12	1183	250	250
29-Sep-12	1150	275	275
30-Sep-12	1175	254	254

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Cavity 2030

Sep-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1178	266	266

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Sep-12	✓ 1213	250

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
20-Sep-12	1083	261

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
16-Sep-12	✓ 315	1163

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# Solution Mining Permit M1-133-3G-A002

## Cavity 2030 Pressures & Flow Rates



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CAVITY 2040

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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	shut in	shut in	shut in
2-Sep-12	shut in	shut in	shut in
3-Sep-12	shut in	shut in	shut in
4-Sep-12	shut in	shut in	shut in
5-Sep-12	shut in	shut in	shut in
6-Sep-12	shut in	shut in	shut in
7-Sep-12	shut in	shut in	shut in
8-Sep-12	shut in	shut in	shut in
9-Sep-12	shut in	shut in	shut in
10-Sep-12	shut in	shut in	shut in
11-Sep-12	shut in	shut in	shut in
12-Sep-12	shut in	shut in	shut in
13-Sep-12	shut in	shut in	shut in
14-Sep-12	shut in	shut in	shut in
15-Sep-12	shut in	shut in	shut in
16-Sep-12	shut in	shut in	shut in
17-Sep-12	shut in	shut in	shut in
18-Sep-12	shut in	shut in	shut in
19-Sep-12	shut in	shut in	shut in
20-Sep-12	shut in	shut in	shut in
21-Sep-12	shut in	shut in	shut in
22-Sep-12	shut in	shut in	shut in
23-Sep-12	shut in	shut in	shut in
24-Sep-12	shut in	shut in	shut in
25-Sep-12	shut in	shut in	shut in
26-Sep-12	shut in	shut in	shut in
27-Sep-12	shut in	shut in	shut in
28-Sep-12	shut in	shut in	shut in
29-Sep-12	shut in	shut in	shut in
30-Sep-12	shut in	shut in	shut in

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CAVITY 2061 ✓

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Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	1163	98	98
2-Sep-12	1145	97	97
3-Sep-12	1200	35	35
4-Sep-12	1200	38	38
5-Sep-12	1200	42	42
6-Sep-12	1213	103	103
7-Sep-12	1195	59	59
8-Sep-12	1195	69	69
9-Sep-12	1200	71	71
10-Sep-12	1200	97	97
11-Sep-12	1195	78	78
12-Sep-12	1195	49	49
13-Sep-12	1180	58	58
14-Sep-12	shut in	shut in	shut in
15-Sep-12	1200	112	112
16-Sep-12	1150	63	63
17-Sep-12	1175	95	95
18-Sep-12	1183	75	75
19-Sep-12	1133	71	71
20-Sep-12	1083	154	154
21-Sep-12	1180	119	119
22-Sep-12	1190	58	58
23-Sep-12	1200	69	69
24-Sep-12	1170	88	88
25-Sep-12	1160	76	76
26-Sep-12	1175	113	113
27-Sep-12	1200	108	108
28-Sep-12	1183	123	123
29-Sep-12	1150	130	130
30-Sep-12	1175	112	112

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Cavity 2061

Sep-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1179	85	85

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Sep-12	1213	103

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
20-Sep-12	1083	154

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
20-Sep-12	154	1083

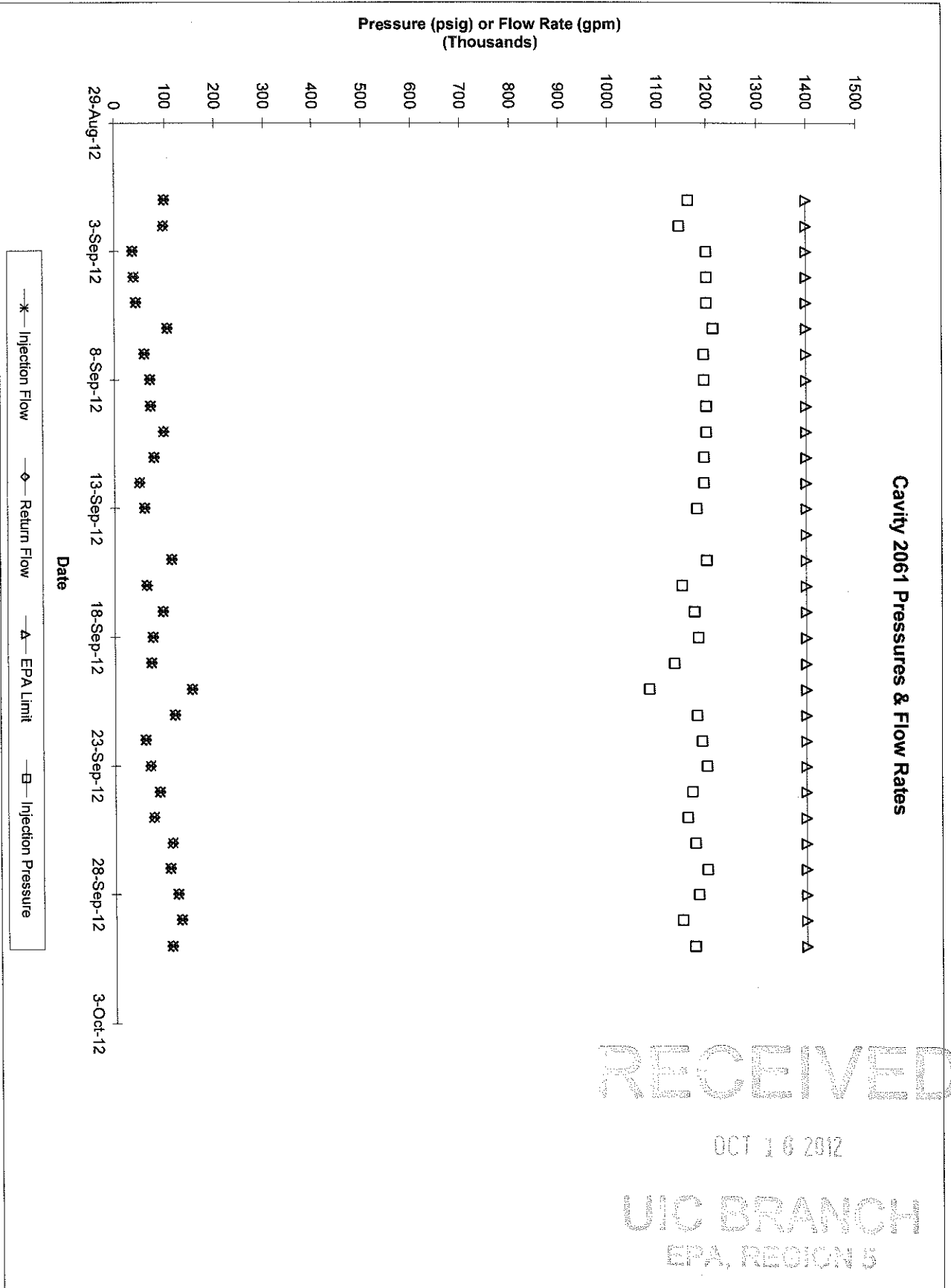
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# Solution Mining Permit M1-133-3G-A002

Cavity 2061 Pressures & Flow Rates



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CAVITY 2062 ✓

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Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Sep-12	shut in	shut in	shut in
2-Sep-12	shut in	shut in	shut in
3-Sep-12	shut in	shut in	shut in
4-Sep-12	shut in	shut in	shut in
5-Sep-12	shut in	shut in	shut in
6-Sep-12	shut in	shut in	shut in
7-Sep-12	shut in	shut in	shut in
8-Sep-12	shut in	shut in	shut in
9-Sep-12	shut in	shut in	shut in
10-Sep-12	shut in	shut in	shut in
11-Sep-12	shut in	shut in	shut in
12-Sep-12	shut in	shut in	shut in
13-Sep-12	shut in	shut in	shut in
14-Sep-12	shut in	shut in	shut in
15-Sep-12	shut in	shut in	shut in
16-Sep-12	shut in	shut in	shut in
17-Sep-12	shut in	shut in	shut in
18-Sep-12	shut in	shut in	shut in
19-Sep-12	shut in	shut in	shut in
20-Sep-12	shut in	shut in	shut in
21-Sep-12	shut in	shut in	shut in
22-Sep-12	shut in	shut in	shut in
23-Sep-12	shut in	shut in	shut in
24-Sep-12	shut in	shut in	shut in
25-Sep-12	shut in	shut in	shut in
26-Sep-12	shut in	shut in	shut in
27-Sep-12	shut in	shut in	shut in
28-Sep-12	shut in	shut in	shut in
29-Sep-12	shut in	shut in	shut in
30-Sep-12	shut in	shut in	shut in

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Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

October 12, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

SUBJ: **Third Quarter Report** – Solution Mining Wells  
For the period of July 1, 2012 – September 30, 2012  
Permit No.: MI-133-3G-A002

1. Solution Mining operations from Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061, Cavity 2062 were conducted during the quarter.
2. Well re-work reports for all well workovers during the period were submitted under separate cover by Doug Patulski, Minefield Superintendent.
3. The flowrates to and from the solution mining wells are monitored continuously. The required quarterly well injection/return balance demonstrations for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062 are attached.
4. The fluid level in the injection zone is "at surface".
5. Attached are copies of the well fluid chemical analyses for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062.
6. Attached are the chemical analyses of the fluid samples obtained from the ground water monitoring wells.

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The requirements of Part I (E)(10), Part II (B)(2) and Part III (C)(3) of Permit No. MI-133-3G-A002 are being met. The samples and measurements are representative of the monitoring activity and the analysis complies with the methods and procedures approved in the Waste Analysis Plan.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Please contact me at (231) 832-8800 if you have any questions.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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Quarterly Injection/Return Flow Balances  
Cavity 1010

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Date	Injection Flow	Dilution Flow	Total Injection Flow	Return Flow	Ratio Inj/Ret
1-Jul-12	shut in	shut in	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in	shut in	shut in
1-Aug-12	shut in	shut in	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in	shut in	shut in

### Quarterly Injection/Return Flow Balances Cavity 1010

[illegible]

**Quarterly Injection/Return Flow Balances**  
**Cavity 1020**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	194	4.6	199	207	0.96
2-Jul-12	214	4.6	219	246	0.89
3-Jul-12	324	4.8	329	373	0.88
4-Jul-12	340	4.9	345	359	0.96
5-Jul-12	332	4.3	336	358	0.94
6-Jul-12	331	4.9	336	370	0.91
7-Jul-12	336	5.4	341	368	0.93
8-Jul-12	338	5.7	344	377	0.91
9-Jul-12	269	5.3	274	279	0.98
10-Jul-12	217	5.1	222	229	0.97
11-Jul-12	211	5.0	216	236	0.92
12-Jul-12	86	5.6	92	203	0.45
13-Jul-12	195	3.9	199	132	1.51
14-Jul-12	219	3.7	223	213	1.05
15-Jul-12	200	0.0	200	217	0.92
16-Jul-12	66	0.0	66	73	0.90
17-Jul-12	shut in	shut in	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in	shut in	shut in
1-Aug-12	shut in	shut in	shut in	shut in	shut in
2-Aug-12	136	0.0	136	155	0.88
3-Aug-12	shut in	shut in	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances**  
**Cavity 1020**

15-Aug-12	shut in	shut in	shut in	shut in	shut in
16-Aug-12	shut in	shut in	shut in	shut in	shut in
17-Aug-12	shut in	shut in	shut in	shut in	shut in
18-Aug-12	shut in	shut in	shut in	shut in	shut in
19-Aug-12	shut in	shut in	shut in	shut in	shut in
20-Aug-12	shut in	shut in	shut in	shut in	shut in
21-Aug-12	shut in	shut in	shut in	shut in	shut in
22-Aug-12	227	4.6	232	253	0.92
23-Aug-12	212	1.9	214	259	0.83
24-Aug-12	35	1.9	37	41	0.90
25-Aug-12	106	5.4	111	138	0.81
26-Aug-12	207	8.6	216	235	0.92
27-Aug-12	183	6.1	189	230	0.82
28-Aug-12	241	8.8	250	320	0.78
29-Aug-12	262	0.0	262	298	0.88
30-Aug-12	239	0.0	239	268	0.89
31-Aug-12	230	2.4	232	272	0.85
1-Sep-12	231	3.0	234	276	0.85
2-Sep-12	230	6.8	237	278	0.85
3-Sep-12	238	9.5	248	295	0.84
4-Sep-12	188	6.9	195	112	1.74
5-Sep-12	196	3.6	200	251	0.80
6-Sep-12	221	5.5	227	221	1.02
7-Sep-12	241	0.0	241	250	0.96
8-Sep-12	243	0.0	243	305	0.80
9-Sep-12	235	0.0	235	290	0.81
10-Sep-12	224	5.6	230	283	0.81
11-Sep-12	212	5.0	217	289	0.75
12-Sep-12	222	6.4	228	316	0.72
13-Sep-12	247	5.8	253	309	0.82
14-Sep-12	shut in	shut in	shut in	shut in	shut in
15-Sep-12	331	6.0	337	390	0.86
16-Sep-12	299	6.2	305	384	0.79
17-Sep-12	312	0.0	312	382	0.82
18-Sep-12	291	0.0	291	350	0.83
19-Sep-12	263	1.2	264	354	0.75
20-Sep-12	shut in	shut in	shut in	shut in	shut in
21-Sep-12	175	1.5	177	236	0.75
22-Sep-12	292	2.2	294	361	0.81
23-Sep-12	289	5.5	295	368	0.80
24-Sep-12	289	4.9	294	363	0.81
25-Sep-12	285	4.4	289	362	0.80
26-Sep-12	308	6.0	314	407	0.77
27-Sep-12	327	0.0	327	414	0.79
28-Sep-12	328	4.0	332	401	0.83
29-Sep-12	322	5.0	327	395	0.83
30-Sep-12	332	5.0	337	406	0.83
Averages	242	4.0	243	286	0.88



**Quarterly Injection/Return Flow Balances**  
**Cavity 1040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	shut in	shut in	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in	shut in	shut in
1-Aug-12	shut in	shut in	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in	shut in	shut in

### Quarterly Injection/Return Flow Balances Cavity 1040

[illegible]

**Quarterly Injection/Return Flow Balances  
Cavity 1050**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	125	5.9	131	125	1.05
2-Jul-12	176	3.9	180	176	1.02
3-Jul-12	161	3.6	165	161	1.02
4-Jul-12	146	4.6	151	146	1.03
5-Jul-12	149	4.5	154	149	1.03
6-Jul-12	150	3.8	154	150	1.03
7-Jul-12	149	3.9	153	149	1.03
8-Jul-12	154	4.2	158	154	1.03
9-Jul-12	140	5.5	146	140	1.04
10-Jul-12	133	5.6	139	133	1.04
11-Jul-12	130	5.2	135	130	1.04
12-Jul-12	114	3.3	117	114	1.03
13-Jul-12	84	2.2	86	84	1.03
14-Jul-12	161	5.3	166	161	1.03
15-Jul-12	157	0.0	157	157	1.00
16-Jul-12	152	0.0	152	152	1.00
17-Jul-12	170	4.8	175	170	1.03
18-Jul-12	189	5.7	195	189	1.03
19-Jul-12	177	6.0	183	177	1.03
20-Jul-12	165	5.1	170	165	1.03
21-Jul-12	166	4.3	170	166	1.03
22-Jul-12	151	4.3	155	151	1.03
23-Jul-12	154	0.0	154	154	1.00
24-Jul-12	151	0.0	151	151	1.00
25-Jul-12	157	4.3	161	157	1.03
26-Jul-12	199	5.3	204	199	1.03
27-Jul-12	174	5.6	180	174	1.03
28-Jul-12	175	5.7	181	175	1.03
29-Jul-12	175	5.9	181	175	1.03
30-Jul-12	162	5.2	167	162	1.03
31-Jul-12	160	5.1	165	160	1.03
1-Aug-12	154	0.0	154	154	1.00
2-Aug-12	160	0.0	160	160	1.00
3-Aug-12	154	5.8	160	154	1.04
4-Aug-12	169	4.9	174	169	1.03
5-Aug-12	16	3.0	19	16	1.19
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	244	6.0	250	244	1.02
11-Aug-12	156	0.0	156	156	1.00
12-Aug-12	154	0.0	154	154	1.00
13-Aug-12	181	1.3	182	181	1.01
14-Aug-12	195	5.9	201	195	1.03

**Quarterly Injection/Return Flow Balances**  
**Cavity 1050**

15-Aug-12	180	6.1	186	180	1.03
16-Aug-12	170	6.1	176	170	1.04
17-Aug-12	201	6.1	207	201	1.03
18-Aug-12	193	5.9	199	193	1.03
19-Aug-12	181	6.4	187	181	1.04
20-Aug-12	172	0.0	172	172	1.00
21-Aug-12	165	0.0	165	165	1.00
22-Aug-12	143	3.7	147	143	1.03
23-Aug-12	138	5.3	143	138	1.04
24-Aug-12	23	1.4	24	23	1.06
25-Aug-12	80	5.8	86	80	1.07
26-Aug-12	160	7.6	168	160	1.05
27-Aug-12	175	5.5	181	175	1.03
28-Aug-12	203	6.7	210	203	1.03
29-Aug-12	168	0.0	168	168	1.00
30-Aug-12	149	0.0	149	149	1.00
31-Aug-12	154	1.8	156	154	1.01
1-Sep-12	157	1.9	159	157	1.01
2-Sep-12	144	6.7	151	144	1.05
3-Sep-12	178	0.0	178	178	1.00
4-Sep-12	172	0.0	172	172	1.00
5-Sep-12	203	5.7	209	203	1.03
6-Sep-12	199	3.5	203	199	1.02
7-Sep-12	178	0.0	178	178	1.00
8-Sep-12	170	0.0	170	170	1.00
9-Sep-12	176	0.0	176	176	1.00
10-Sep-12	192	2.7	195	192	1.01
11-Sep-12	186	5.9	192	186	1.03
12-Sep-12	172	0.0	172	172	1.00
13-Sep-12	144	2.5	147	144	1.02
14-Sep-12	shut in	shut in	shut in	shut in	shut in
15-Sep-12	110	5.3	115	110	1.05
16-Sep-12	175	4.3	179	175	1.02
17-Sep-12	169	0.0	169	169	1.00
18-Sep-12	161	0.0	161	161	1.00
19-Sep-12	188	5.2	193	188	1.03
20-Sep-12	138	0.0	138	138	1.00
21-Sep-12	145	0.0	145	145	1.00
22-Sep-12	155	4.2	159	155	1.03
23-Sep-12	141	2.7	144	141	1.02
24-Sep-12	159	2.6	162	159	1.02
25-Sep-12	203	2.9	206	203	1.01
26-Sep-12	167	2.0	169	167	1.01
27-Sep-12	198	0.0	198	198	1.00
28-Sep-12	182	5.3	187	182	1.03
29-Sep-12	180	2.6	183	180	1.01
30-Sep-12	189	3.5	193	189	1.02
Averages	161	3	163	160	1

**Quarterly Injection/Return Flow Balances  
Cavity 1060**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	215	3.9	219	211	1.04
2-Jul-12	160	0.0	160	164	0.98
3-Jul-12	shut in	shut in	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in	shut in	shut in
10-Jul-12	139	3.5	143	147	0.97
11-Jul-12	153	1.2	154	136	1.13
12-Jul-12	229	3.5	233	212	1.10
13-Jul-12	132	3.5	136	161	0.84
14-Jul-12	153	4.8	158	146	1.08
15-Jul-12	201	0.0	201	207	0.97
16-Jul-12	229	0.0	229	242	0.95
17-Jul-12	271	5.6	277	302	0.92
18-Jul-12	285	5.5	291	287	1.01
19-Jul-12	271	5.6	277	298	0.93
20-Jul-12	278	5.3	283	290	0.98
21-Jul-12	278	5.4	283	323	0.88
22-Jul-12	285	5.5	291	306	0.95
23-Jul-12	340	0.0	340	344	0.99
24-Jul-12	333	0.0	333	335	0.99
25-Jul-12	333	1.7	335	346	0.97
26-Jul-12	319	4.4	323	302	1.07
27-Jul-12	319	4.7	324	333	0.97
28-Jul-12	340	4.9	345	339	1.02
29-Jul-12	313	5.3	318	332	0.96
30-Jul-12	340	4.2	344	339	1.02
31-Jul-12	340	4.3	344	348	0.99
1-Aug-12	333	0.0	333	346	0.96
2-Aug-12	333	0.0	333	338	0.99
3-Aug-12	313	5.6	319	353	0.90
4-Aug-12	354	5.7	360	357	1.01
5-Aug-12	160	2.4	162	156	1.04
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	146	0.0	146	360	0.41
11-Aug-12	271	0.0	271	288	0.94
12-Aug-12	299	0.0	299	278	1.08
13-Aug-12	271	3.3	274	277	0.99
14-Aug-12	285	5.4	290	282	1.03

**Quarterly Injection/Return Flow Balances  
Cavity 1060**

15-Aug-12	299	5.6	305	316	0.96
16-Aug-12	285	0.0	285	315	0.90
17-Aug-12	299	5.8	305	313	0.97
18-Aug-12	354	5.6	360	320	1.12
19-Aug-12	389	5.5	395	352	1.12
20-Aug-12	306	0.0	306	361	0.85
21-Aug-12	285	0.0	285	330	0.86
22-Aug-12	shut in	shut in	shut in	shut in	shut in
23-Aug-12	shut in	shut in	shut in	shut in	shut in
24-Aug-12	shut in	shut in	shut in	shut in	shut in
25-Aug-12	shut in	shut in	shut in	shut in	shut in
26-Aug-12	shut in	shut in	shut in	shut in	shut in
27-Aug-12	shut in	shut in	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in	shut in	shut in
31-Aug-12	shut in	shut in	shut in	shut in	shut in
1-Sep-12	shut in	shut in	shut in	shut in	shut in
2-Sep-12	shut in	shut in	shut in	shut in	shut in
3-Sep-12	shut in	shut in	shut in	shut in	shut in
4-Sep-12	shut in	shut in	shut in	shut in	shut in
5-Sep-12	shut in	shut in	shut in	shut in	shut in
6-Sep-12	shut in	shut in	shut in	shut in	shut in
7-Sep-12	shut in	shut in	shut in	shut in	shut in
8-Sep-12	shut in	shut in	shut in	shut in	shut in
9-Sep-12	shut in	shut in	shut in	shut in	shut in
10-Sep-12	shut in	shut in	shut in	shut in	shut in
11-Sep-12	shut in	shut in	shut in	shut in	shut in
12-Sep-12	shut in	shut in	shut in	shut in	shut in
13-Sep-12	shut in	shut in	shut in	shut in	shut in
14-Sep-12	shut in	shut in	shut in	shut in	shut in
15-Sep-12	shut in	shut in	shut in	shut in	shut in
16-Sep-12	shut in	shut in	shut in	shut in	shut in
17-Sep-12	shut in	shut in	shut in	shut in	shut in
18-Sep-12	shut in	shut in	shut in	shut in	shut in
19-Sep-12	shut in	shut in	shut in	shut in	shut in
20-Sep-12	shut in	shut in	shut in	shut in	shut in
21-Sep-12	shut in	shut in	shut in	shut in	shut in
22-Sep-12	shut in	shut in	shut in	shut in	shut in
23-Sep-12	shut in	shut in	shut in	shut in	shut in
24-Sep-12	shut in	shut in	shut in	shut in	shut in
25-Sep-12	shut in	shut in	shut in	shut in	shut in
26-Sep-12	shut in	shut in	shut in	shut in	shut in
27-Sep-12	shut in	shut in	shut in	shut in	shut in
28-Sep-12	shut in	shut in	shut in	shut in	shut in
29-Sep-12	shut in	shut in	shut in	shut in	shut in
30-Sep-12	shut in	shut in	shut in	shut in	shut in
Averages	274	3	277	288	1

**Quarterly Injection/Return Flow Balances  
Cavity 2030**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	259	0.0	259	259	1.00
2-Jul-12	192	0.0	192	192	1.00
3-Jul-12	223	0.0	223	223	1.00
4-Jul-12	208	0.0	208	208	1.00
5-Jul-12	222	0.0	222	222	1.00
6-Jul-12	215	0.0	215	215	1.00
7-Jul-12	229	0.0	229	229	1.00
8-Jul-12	222	0.0	222	222	1.00
9-Jul-12	210	0.0	210	210	1.00
10-Jul-12	219	0.0	219	219	1.00
11-Jul-12	211	0.0	211	211	1.00
12-Jul-12	238	0.0	238	238	1.00
13-Jul-12	136	0.0	136	136	1.00
14-Jul-12	211	0.0	211	211	1.00
15-Jul-12	214	0.0	214	214	1.00
16-Jul-12	200	0.0	200	200	1.00
17-Jul-12	226	0.0	226	226	1.00
18-Jul-12	256	0.0	256	256	1.00
19-Jul-12	206	0.0	206	206	1.00
20-Jul-12	133	0.0	133	133	1.00
21-Jul-12	shut in	shut in	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in	shut in	shut in
23-Jul-12	265	0.0	265	265	1.00
24-Jul-12	240	0.0	240	240	1.00
25-Jul-12	259	0.0	259	259	1.00
26-Jul-12	269	0.0	269	269	1.00
27-Jul-12	255	0.0	255	255	1.00
28-Jul-12	216	0.0	216	216	1.00
29-Jul-12	251	0.0	251	251	1.00
30-Jul-12	215	0.0	215	215	1.00
31-Jul-12	252	0.0	252	252	1.00
1-Aug-12	207	0.0	207	207	1.00
2-Aug-12	61	0.0	61	61	1.00
3-Aug-12	shut in	shut in	shut in	shut in	shut in
4-Aug-12	245	0.0	245	245	1.00
5-Aug-12	121	0.0	121	121	1.00
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	149	0.0	149	149	1.00
11-Aug-12	258	0.0	258	258	1.00
12-Aug-12	240	0.0	240	240	1.00
13-Aug-12	235	0.0	235	235	1.00
14-Aug-12	265	0.0	265	265	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2030**

15-Aug-12	253	0.0	253	253	1.00
16-Aug-12	267	0.0	267	267	1.00
17-Aug-12	243	0.0	243	243	1.00
18-Aug-12	278	0.0	278	278	1.00
19-Aug-12	250	0.0	250	250	1.00
20-Aug-12	250	0.0	250	250	1.00
21-Aug-12	264	0.0	264	264	1.00
22-Aug-12	250	0.0	250	250	1.00
23-Aug-12	257	0.0	257	257	1.00
24-Aug-12	69	0.0	69	69	1.00
25-Aug-12	167	0.0	167	167	1.00
26-Aug-12	215	0.0	215	215	1.00
27-Aug-12	250	0.0	250	250	1.00
28-Aug-12	260	0.0	260	260	1.00
29-Aug-12	260	0.0	260	260	1.00
30-Aug-12	236	0.0	236	236	1.00
31-Aug-12	201	0.0	201	201	1.00
1-Sep-12	243	0.0	243	243	1.00
2-Sep-12	243	0.0	243	243	1.00
3-Sep-12	264	0.0	264	264	1.00
4-Sep-12	250	0.0	250	250	1.00
5-Sep-12	250	0.0	250	250	1.00
6-Sep-12	250	0.0	250	250	1.00
7-Sep-12	285	0.0	285	285	1.00
8-Sep-12	285	0.0	285	285	1.00
9-Sep-12	285	0.0	285	285	1.00
10-Sep-12	271	0.0	271	271	1.00
11-Sep-12	257	0.0	257	257	1.00
12-Sep-12	271	0.0	271	271	1.00
13-Sep-12	285	0.0	285	285	1.00
14-Sep-12	shut in	shut in	shut in	shut in	shut in
15-Sep-12	257	0.0	257	257	1.00
16-Sep-12	315	0.0	315	315	1.00
17-Sep-12	265	0.0	265	265	1.00
18-Sep-12	268	0.0	268	268	1.00
19-Sep-12	260	0.0	260	260	1.00
20-Sep-12	261	0.0	261	261	1.00
21-Sep-12	227	0.0	227	227	1.00
22-Sep-12	284	0.0	284	284	1.00
23-Sep-12	267	0.0	267	267	1.00
24-Sep-12	268	0.0	268	268	1.00
25-Sep-12	273	0.0	273	273	1.00
26-Sep-12	265	0.0	265	265	1.00
27-Sep-12	284	0.0	284	284	1.00
28-Sep-12	250	0.0	250	250	1.00
29-Sep-12	275	0.0	275	275	1.00
30-Sep-12	254	0.0	254	254	1.00
Averages	237	0.0	236	236	1.00



**Quarterly Injection/Return Flow Balances  
Cavity 2040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	shut in	shut in	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in	shut in	shut in
1-Aug-12	shut in	shut in	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in	shut in	shut in

### Quarterly Injection/Return Flow Balances Cavity 2040

[illegible]

**Quarterly Injection/Return Flow Balances  
Cavity 2061**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	108	0.0	108	108	1.00
2-Jul-12	65	0.0	65	65	1.00
3-Jul-12	100	0.0	100	100	1.00
4-Jul-12	95	0.0	95	95	1.00
5-Jul-12	97	0.0	97	97	1.00
6-Jul-12	98	0.0	98	98	1.00
7-Jul-12	79	0.0	79	79	1.00
8-Jul-12	84	0.0	84	84	1.00
9-Jul-12	86	0.0	86	86	1.00
10-Jul-12	85	0.0	85	85	1.00
11-Jul-12	99	0.0	99	99	1.00
12-Jul-12	67	0.0	67	67	1.00
13-Jul-12	56	0.0	56	56	1.00
14-Jul-12	67	0.0	67	67	1.00
15-Jul-12	56	0.0	56	56	1.00
16-Jul-12	shut in	shut in	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in	shut in	shut in
20-Jul-12	49	0.0	49	49	1.00
21-Jul-12	192	0.0	192	192	1.00
22-Jul-12	172	0.0	172	172	1.00
23-Jul-12	shut in	shut in	shut in	shut in	shut in
24-Jul-12	92	0.0	92	92	1.00
25-Jul-12	shut in	shut in	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in	shut in	shut in
27-Jul-12	60	0.0	60	60	1.00
28-Jul-12	96	0.0	96	96	1.00
29-Jul-12	59	0.0	59	59	1.00
30-Jul-12	106	0.0	106	106	1.00
31-Jul-12	100	0.0	100	100	1.00
1-Aug-12	111	0.0	111	111	1.00
2-Aug-12	94	0.0	94	94	1.00
3-Aug-12	137	0.0	137	137	1.00
4-Aug-12	shut in	shut in	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in	shut in	shut in
11-Aug-12	66	0.0	66	66	1.00
12-Aug-12	44	0.0	44	44	1.00
13-Aug-12	shut in	shut in	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances  
Cavity 2061**

15-Aug-12	36	0.0	36	36	1.00
16-Aug-12	78	0.0	78	78	1.00
17-Aug-12	99	0.0	99	99	1.00
18-Aug-12	69	0.0	69	69	1.00
19-Aug-12	163	0.0	163	163	1.00
20-Aug-12	132	0.0	132	132	1.00
21-Aug-12	61	0.0	61	61	1.00
22-Aug-12	110	0.0	110	110	1.00
23-Aug-12	102	0.0	102	102	1.00
24-Aug-12	20	0.0	20	20	1.00
25-Aug-12	47	0.0	47	47	1.00
26-Aug-12	69	0.0	69	69	1.00
27-Aug-12	shut in	shut in	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in	shut in	shut in
31-Aug-12	89	0.0	89	89	1.00
1-Sep-12	98	0.0	98	98	1.00
2-Sep-12	97	0.0	97	97	1.00
3-Sep-12	35	0.0	35	35	1.00
4-Sep-12	38	0.0	38	38	1.00
5-Sep-12	42	0.0	42	42	1.00
6-Sep-12	103	0.0	103	103	1.00
7-Sep-12	59	0.0	59	59	1.00
8-Sep-12	69	0.0	69	69	1.00
9-Sep-12	71	0.0	71	71	1.00
10-Sep-12	97	0.0	97	97	1.00
11-Sep-12	78	0.0	78	78	1.00
12-Sep-12	49	0.0	49	49	1.00
13-Sep-12	58	0.0	58	58	1.00
14-Sep-12	shut in	shut in	shut in	shut in	shut in
15-Sep-12	112	0.0	112	112	1.00
16-Sep-12	63	0.0	63	63	1.00
17-Sep-12	95	0.0	95	95	1.00
18-Sep-12	75	0.0	75	75	1.00
19-Sep-12	71	0.0	71	71	1.00
20-Sep-12	154	0.0	154	154	1.00
21-Sep-12	119	0.0	119	119	1.00
22-Sep-12	58	0.0	58	58	1.00
23-Sep-12	69	0.0	69	69	1.00
24-Sep-12	88	0.0	88	88	1.00
25-Sep-12	76	0.0	76	76	1.00
26-Sep-12	113	0.0	113	113	1.00
27-Sep-12	108	0.0	108	108	1.00
28-Sep-12	123	0.0	123	123	1.00
29-Sep-12	130	0.0	130	130	1.00
30-Sep-12	112	0.0	112	112	1.00
Averages	87	0.0	86	87	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2062**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jul-12	shut in	shut in	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in	shut in	shut in
1-Aug-12	shut in	shut in	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in	shut in	shut in

### Quarterly Injection/Return Flow Balances Cavity 2062

[illegible]



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## 2012 Monitor Well Results – 3<sup>rd</sup> Quarter Cluster 1

Date	Well Number	Chloride Concentration (mg/L)
September 2012	Cluster 1 M.W. 01	468.0
September 2012	Cluster 1 M.W. 02	764.0
September 2012	Cluster 1 M.W. 03	127.6
September 2012	Cluster 1 M.W. 04	2,357.6
September 2012	Cluster 1 M.W. 05	407.7
September 2012	Cluster 1 M.W. 06	159.5
September 2012	Cluster 1 M.W. 07	317.3
September 2012	Cluster 1 M.W. 08	514.1
September 2012	Cluster 1 M.W. 09	8,242.8
September 2012	Cluster 1 M.W. 10	2,074.0
September 2012	Cluster 1 M.W. 11	647.0
September 2012	Cluster 1 M.W. 12	212.7
September 2012	Cluster 1 M.W. 13	3,332.6
September 2012	Cluster 1 M.W. 14	250.0
September 2012	Cluster 1 M.W. 34	2,836.3
September 2012	Cluster 1 M.W. 35	138.3
September 2012	Cluster 1 M.W. 36	44.3
September 2012	Cluster 1 M.W. 37	1,949.9
September 2012	Cluster 1 M.W. 38	16.0
September 2012	Cluster 1 M.W. 39	8.9
September 2012	Cluster 1 M.W. 40	241.1

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Tel 231-832-8800

## 2012 Monitor Well Results – 3<sup>rd</sup> Quarter Cluster 2

Date	Well Number	Chloride Concentration (mg/L)
September 2012	Cluster 2 M.W. 01	124.1
September 2012	Cluster 2 M.W. 02	Dry well
September 2012	Cluster 2 M.W. 04	70.9
September 2012	Cluster 2 M.W. 05	257.0
September 2012	Cluster 2 M.W. 06	16.0
September 2012	Cluster 2 M.W. 10	Dry well
September 2012	Cluster 2 M.W. 33	44.3



MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
9-18-12	7:45 A.M.	1 (PP-1)	Antimo Petito
9-18-12	8:10 A.M.	2 (PP-2)	Antimo Petito
9-18-12	9:10 A.M.	3 (PP-3)	Antimo Petito
9-18-12	9:25 A.M.	4 (W-126-1)	Antimo Petito
9-18-12	9:45 A.M.	5 (W-126-2)	Antimo Petito
9-18-12	9:55 A.M.	6 (CL2-1)	Antimo Petito
9-18-12	10:05 A.M.	7 (CL2-5)	Antimo Petito
9-18-12	10:05 A.M.	8 (CL2-6)	Antimo Petito
9-18-12	10:45 A.M.	9 (CL2-4)	Antimo Petito
Dry Well		10 (CL2-2)	
9-18-12	11:05 A.M.	11 (CL1-3)	Antimo Petito
9-18-12	11:20 A.M.	12 (CL1-6)	Antimo Petito
9-18-12	11:25 A.M.	13 (CL1-5)	Antimo Petito
9-18-12	11:45 A.M.	14 (CL1-7)	Antimo Petito
9-18-12	11:40 A.M.	15 (CL1-1)	Antimo Petito
9-18-12	11:50 A.M.	16 (CL1-2)	Antimo Petito
		17 (CL1-9)	
		18 (CL1-11)	
		19 (CL1-8)	
		20 (CL1-4)	
		21 (PW94-2)	
		22 (PW94-1)	
		23 (CL1-10)	
		24 (T-126-1)	
		25 (CL1-12)	
		26 (T-126-2)	
		27 (T-126-3)	
		28 (T-126-5)	
		29 (T-126-4)	
		30 (CL1-13)	
9-18-12	11:10 A.M.	31 (CL1-14)	Antimo Petito
9-18-12	10:40 A.M.	32 (PW-32)	Antimo Petito
9-18-12	11:00 A.M.	33 (CL2-33)	Antimo Petito
		34 (CL1-34)	
		35 (MW-35)	
		36 (MW-36)	
		37 (MW-37)	
		38 (MW-38)	
		39 (MW-39)	
		40 (MW-40)	
		41 (PW-41)	

Received in Lab By (Name/Signature)

Allison VanOr Allison VanOr

Date Received 9/18/12

Time Received 11:58 AM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED      TIME SAMPLED      SAMPLE #      SAMPLER NAME/SIGNATURE

1 (PP-1)

2 (PP-2)

3 (PP-3)

4 (W-126-1)

5 (W-126-2)

6 (CL2-1)

7 (CL2-5)

8 (CL2-6)

9 (CL2-4)

Dry Well 10 (CL2-2)

11 (CL1-3)

12 (CL1-6)

13 (CL1-5)

14 (CL1-7)

15 (CL1-1)

16 (CL1-2)

17 (CL1-9)

18 (CL1-11)

19 (CL1-8)

9-18-12 1:20 PM 20 (CL1-4)

9-18-12 2:20 PM 21 (PW94-2)

9-18-12 2:30 PM 22 (PW94-1)

9-18-12 1:25 PM 23 (CL1-10)

9-18-12 1:30 PM 24 (T-126-1)

25 (CL1-12)

9-18-12 1:50 PM 26 (T-126-2)

9-18-12 2:05 PM 27 (T-126-3)

28 (T-126-5)

29 (T-126-4)

30 (CL1-13)

31 (CL1-14)

32 (PW-32)

33 (CL2-33)

34 (CL1-34)

35 (MW-35)

36 (MW-36)

37 (MW-37)

38 (MW-38)

39 (MW-39)

40 (MW-40)

9-18-12 2:25 41 (PW-41)

Received in Lab By (Name/Signature)

Allison Varras Allison Varras

Date Received

9/18/12

Time Received

2:45 PM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED TIME SAMPLED SAMPLE # SAMPLER NAME/SIGNATURE

		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (W-126-1)	
		5 (W-126-2)	
		6 (CL2-1)	
		7 (CL2-5)	
		8 (CL2-6)	
		9 (CL2-4)	
		10 (CL2-2)	
		11 (CL1-3)	
		12 (CL1-6)	
		13 (CL1-5)	
		14 (CL1-7)	
		15 (CL1-1)	
		16 (CL1-2)	
* 9-19-12	12:45 PM	17 (CL1-9)	Antimo Petito
* 9-19-12	2:05 PM	18 (CL1-11)	Antimo Petito
* 9-19-12	1:05 PM	19 (CL1-8)	Antimo Petito
		20 (CL1-4)	
		21 (PW84-2)	
		22 (PW84-1)	
		23 (CL1-10)	
		24 (T-126-1)	
* 9-19-12	1:50 PM	25 (CL1-12)	Antimo Petito
		26 (T-126-2)	
		27 (T-126-3)	
* 9-19-12	1:25 PM	28 (T126-5)	Antimo Petito
* 9-19-12	1:35 PM	29 (T-126-4)	Antimo Petito
		30 (CL1-13)	
		31 (CL1-14)	
		32 (PW-32)	
		33 (CL2-33)	
* 9-19-12	2:30 PM	34 (CL1-34)	Antimo Petito
* 9-19-12	2:15 PM	35 (MW-35)	Antimo Petito
* 9-19-12	2:45 PM	36 (MW-36)	Antimo Petito
		37 (MW-37)	
		38 (MW-38)	
		39 (MW-39)	
		40 (MW-40)	
		41 (PW-41)	

Received in Lab By (Name/Signature)

Allison Vano's Allison Vano's

Date Received

9/19/12

Time Received

3:00 PM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (W-126-1)	
		5 (W-126-2)	
		6 (CL2-1)	
		7 (CL2-5)	
		8 (CL2-6)	
		9 (CL2-4)	
Dry Well		10 (CL2-2)	
		11 (CL1-3)	
		12 (CL1-6)	
		13 (CL1-5)	
		14 (CL1-7)	
		15 (CL1-1)	
		16 (CL1-2)	
		17 (CL1-9)	
		18 (CL1-11)	
		19 (CL1-8)	
		20 (CL1-4)	
		21 (PW94-2)	
		22 (PW94-1)	
		23 (CL1-10)	
		24 (T-126-1)	
		25 (CL1-12)	
		26 (T-126-2)	
		27 (T-126-3)	
		28 (T126-5)	
		29 (T-126-4)	
* 9-26-12	10:20 AM	30 (CL1-13)	Antimo Pelito
		31 (CL1-14)	
		32 (PW-32)	
		33 (CL2-33)	
		34 (CL1-34)	
		35 (MW-35)	
		36 (MW-36)	
* 9-26-12	11:25 AM	37 (MW-37)	Antimo Pelito
* 9-26-12	10:35 AM	38 (MW-38)	Antimo Pelito
* 9-26-12	11:45 AM	39 (MW-39)	Antimo Pelito
* 9-26-12	11:00 AM	40 (MW-40)	Antimo Pelito
		41 (PW-41)	

Received in Lab By (Name/Signature)

Brian Heminger

APPROVED BY:

Antimo Pelito 9/26/12

Date Received

9-26-12 ok ASV 9/26/12

Time Received

12:00 pm ok ASV 9/26/12



September 05, 2012

Mosaic Potash - Hersey  
Attn: Ms. Allison VanOs  
1395 - 135th Avenue  
Hersey, MI 49639

**Project: Quarterly Monitoring of Inorganic Pollutants**

Dear Ms. Allison VanOs,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

<b>Work Order</b>	<b>Received</b>	<b>Description</b>
1208383	08/22/2012	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#11-054-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#002841); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#03068); Michigan DPH (#0034); Minnesota DPH (#367345); New York ELAP (#46503); North Carolina DNRE (#659); Texas CEQ (#T104704495-12-2); Virginia DCLS (#1622); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-09-00163).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Rice", with a stylized flourish at the end.

Jennifer L. Rice  
Project Chemist



## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey** Work Order: **1208383**  
Project: Quarterly Monitoring of Inorganic Pollutants Description: Laboratory Services  
Client Sample ID: **Disposal** Sampled: 08/21/12 10:30  
Lab Sample ID: **1208383-01** Sampled By: A.V.  
Matrix: Water Received: 08/22/12 10:30

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Barium	67	10	ug/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Calcium	170	0.50	mg/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Cobalt	14	10	ug/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Copper	170	10	ug/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Iron	920	50	ug/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Lead	<50	50	ug/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Magnesium	34	0.50	mg/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Manganese	580	10	ug/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294
Selenium	38	5.0	ug/L	5	USEPA-6020A	08/30/12 17:00	CKD	1210290
Sodium	16000	50	mg/L	100	USEPA-6010C	08/28/12 11:53	KLV	1210294
Zinc	51	20	ug/L	1	USEPA-6010C	08/28/12 12:28	KLV	1210294

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**ANALYTICAL REPORT**

Client: **Mosaic Potash - Hersey**  
 Project: Quarterly Monitoring of Inorganic Pollutants  
 Client Sample ID: **Disposal**  
 Lab Sample ID: **1208383-01**  
 Matrix: Water

Work Order: **1208383**  
 Description: Laboratory Services  
 Sampled: 08/21/12 10:30  
 Sampled By: A.V.  
 Received: 08/22/12 10:30

**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	150	20	mg/L	1	SM 2320 B 20th	08/29/12 13:01	SKA	1210512
Alkalinity, Carbonate	68	2.0	mg/L	1	SM 2320 B 20th	08/29/12 13:01	SKA	1210514
Alkalinity, Total	220	20	mg/L	1	SM 2320 B 20th	08/29/12 13:01	SKA	1210513
*Bromide	<300	300	mg/L	100	ASTM D 1246-95 (99)	08/23/12 16:21	KCS	1210313
Chloride	26000	500	mg/L	500	SM 4500-Cl E 20th	08/23/12 13:52	LMA	1210307
Conductivity @ 25° C	66240	5	umhos/cm	1	SM 2510 B 20th	08/23/12 17:56	KCS	1210315
*pH	9.0	1.0	pH Units	1	SM 4500-H B 20th	08/23/12 10:44	SKA	1210247
*Oxidation/Reduction Potential	152	1	mV	1	ASTM D 1498-76	08/24/12 06:50	LMA	1210317
Sulfate	320	50	mg/L	10	ASTM D516-90 (02)	08/29/12 12:52	LMA	1210537
Residue, Dissolved @ 180° C	44900	2500	mg/L	1	SM 2540 C 20th	08/24/12 15:18	KCS	1210337
Specific Gravity	1.0238	0.7000	@ 60 °F	1	ASTM D 1429-79	08/31/12 17:53	HLB	1210655
Carbon, Total Organic	3.1	1.0	mg/L	1	SM 5310 C 20th	09/04/12 20:20	KAR	1210708
Sulfide, Total	3.8	1.0	mg/L	1	SM 4500-S2 F 20th	08/24/12 13:00	KAR	1210362

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\*See Statement of Data Qualifications

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**ANALYTICAL REPORT**

Client:	<b>Mosaic Potash - Hersey</b>	Work Order:	<b>1208383</b>
Project:	Quarterly Monitoring of Inorganic Pollutants	Description:	Laboratory Services
Client Sample ID:	<b>Recycle</b>	Sampled:	08/21/12 10:45
Lab Sample ID:	<b>1208383-02</b>	Sampled By:	A.V.
Matrix:	Water	Received:	08/22/12 10:30

**Total Metals by EPA 6000/7000 Series Methods**

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
*Barium	200	50	ug/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294
Calcium	3700	250	mg/L	500	USEPA-6010C	08/28/12 11:57	KLV	1210294
*Cobalt	<50	50	ug/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294
*Copper	<50	50	ug/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294
*Iron	950	250	ug/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294
*Lead	<250	250	ug/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294
*Magnesium	97	2.5	mg/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294
*Manganese	140	50	ug/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294
*Selenium	<100	100	ug/L	100	USEPA-6020A	08/30/12 17:12	CKD	1210290
Sodium	240000	1200	mg/L	2500	USEPA-6010C	08/28/12 12:04	KLV	1210294
*Zinc	<100	100	ug/L	5	USEPA-6010C	08/28/12 12:45	KLV	1210294

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**ANALYTICAL REPORT**

Client:	<b>Mosaic Potash - Hersey</b>	Work Order:	<b>1208383</b>
Project:	Quarterly Monitoring of Inorganic Pollutants	Description:	Laboratory Services
Client Sample ID:	<b>Recycle</b>	Sampled:	08/21/12 10:45
Lab Sample ID:	<b>1208383-02</b>	Sampled By:	A.V.
Matrix:	Water	Received:	08/22/12 10:30

**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	38	20	mg/L	1	SM 2320 B 20th	08/29/12 13:01	SKA	1210512
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B 20th	08/29/12 13:01	SKA	1210514
*Bromide	1100	600	mg/L	200	ASTM D 1246-95 (99)	08/23/12 16:21	KCS	1210313
Conductivity @ 25° C	219300	5	umhos/cm	1	SM 2510 B 20th	08/23/12 17:56	KCS	1210315
Specific Gravity	1.2180	0.7000	@ 60 °F	1	ASTM D 1429-79	08/31/12 17:53	HLB	1210655
Carbon, Total Organic	<1.0	1.0	mg/L	1	SM 5310 C 20th	09/04/12 20:32	KAR	1210708
Alkalinity, Total	38	20	mg/L	1	SM 2320 B 20th	08/29/12 13:01	SKA	1210513
*Oxidation/Reduction Potential	248	1	mV	1	ASTM D 1498-76	08/24/12 06:50	LMA	1210317
*pH	6.8	1.0	pH Units	1	SM 4500-H B 20th	08/23/12 10:44	SKA	1210247
Residue, Dissolved @ 180° C	329000	5000	mg/L	1	SM 2540 C 20th	08/24/12 15:18	KCS	1210337
Chloride	190000	5000	mg/L	5000	SM 4500-Cl E 20th	08/23/12 12:54	LMA	1210307
Sulfate	2400	500	mg/L	100	ASTM D516-90 (02)	08/29/12 10:55	LMA	1210537
Sulfide, Total	3.6	1.0	mg/L	1	SM 4500-S2 F 20th	08/24/12 13:00	KAR	1210362

\*See Statement of Data Qualifications

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## STATEMENT OF DATA QUALIFICATIONS

### Total Metals by EPA 6000/7000 Series Methods

**Qualification:** The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-6010C

Sample/Analyte:	1208383-02	Recycle	Barium
	1208383-02	Recycle	Cobalt
	1208383-02	Recycle	Copper
	1208383-02	Recycle	Iron
	1208383-02	Recycle	Lead
	1208383-02	Recycle	Magnesium
	1208383-02	Recycle	Manganese
	1208383-02	Recycle	Zinc

Analysis: USEPA-6020A

Sample/Analyte:	1208383-02	Recycle	Selenium
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**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

**Qualification:** The quality control batch(s), associated with the following samples and analyses, do not contain an MS/MSD or MS/DUP because client specific matrix QC was not requested. An LCS and LCSD were analyzed as the measure of batch precision and accuracy.

Analysis: ASTM D 1246-95 (99)

Sample/Analyte:	1208383-01	Disposal	Bromide
	1208383-02	Recycle	Bromide

**Qualification:** The referenced method requires analysis occur immediately after sample collection. Because analysis was not performed in the field, the reported result must be considered estimated.

Analysis: ASTM D 1498-76

Sample/Analyte:	1208383-01	Disposal	Oxidation/Reduction Potential
	1208383-02	Recycle	Oxidation/Reduction Potential

Analysis: SM 4500-H B 20th

Sample/Analyte:	1208383-01	Disposal	pH
	1208383-02	Recycle	pH

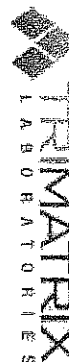
**Qualification:** The following reported test methods and analyte(s) are exceptions to our NELAP Fields of Accreditation, or for which accreditation is not required, applicable, or available.

Analysis: ASTM D 1429-79

Analyte(s): Specific Gravity

Analysis: ASTM D 1498-76

Analyte(s): Oxidation/Reduction Potential



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# Chain of Custody Record

COC No. **141895**

Analyses Requested

Pg. 1 of 1

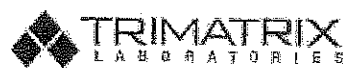
<b>For Lab Use Only</b> Date: <u>12/18/09</u> Project ID: <u>2318</u> Project Name: <u>Mosaic Potash</u> City/State/Zip: <u>Harbor, MI 49639</u> Phone: <u>234-8834</u> Email: <u>allison.vands@mosaicco.com</u>		<b>Project Name:</b> <u>Mosaic Potash</u> <b>Ordering Method:</b> <u>Ordering Monitoring</u> <b>Client Project No. / PO No.:</b> <u>29392</u> <b>Invoice To:</b> <input type="checkbox"/> Client <input type="checkbox"/> Other (comment:) <b>Consolidate Report To:</b>																						
<b>Field Sample ID:</b> <u>Disposal</u> <b>Collection Date:</b> <u>12/12/09</u> <b>Collection Time:</b> <u>10:30 AM</u> <b>Collector:</b> <u>Re cycle</u>		<b>Number of Containers Submitted:</b> <table border="1"> <tr> <th>Container</th> <th>Contents</th> <th>Volume</th> </tr> <tr> <td>1</td> <td>PINK GREEN</td> <td>3</td> </tr> <tr> <td>2</td> <td>WHITE</td> <td>2</td> </tr> <tr> <td>3</td> <td>PINK GREEN</td> <td>3</td> </tr> <tr> <td>4</td> <td>WHITE</td> <td>2</td> </tr> <tr> <td>5</td> <td>PINK GREEN</td> <td>3</td> </tr> <tr> <td>6</td> <td>WHITE</td> <td>2</td> </tr> </table>		Container	Contents	Volume	1	PINK GREEN	3	2	WHITE	2	3	PINK GREEN	3	4	WHITE	2	5	PINK GREEN	3	6	WHITE	2
Container	Contents	Volume																						
1	PINK GREEN	3																						
2	WHITE	2																						
3	PINK GREEN	3																						
4	WHITE	2																						
5	PINK GREEN	3																						
6	WHITE	2																						
<b>Signature of Client Representative:</b> <u>Allison Vands</u> <b>Title:</b> <u>Manager</u> <b>Date:</b> <u>12/12/09</u>		<b>Signature of Lab Representative:</b> <u>[Signature]</u> <b>Title:</b> <u>Analyst</u> <b>Date:</b> <u>12/12/09</u>																						

WHITE COPY - REPORT

YELLOW COPY - LABORATORY

PINK COPY - FIELD

## SAMPLE RECEIVING / LOG-IN CHECKLIST



Client: <u>Mosiac</u>	New / Add To: <u>23-18</u>	Work Order #: <u>R1208383</u>
Received From: <u>23-18</u>	Project Number: <u>23-18</u>	Sample #: <u>23-18</u>

Recorded by (initials/date): <u>UC 8-22-12</u>	<input checked="" type="checkbox"/> Cooler <input type="checkbox"/> Box <input type="checkbox"/> Other: <u>1</u>	Qty Received: <u>1</u>	<input checked="" type="checkbox"/> In-Gut (1202) Thermometer Used: <input type="checkbox"/> Digital Thermometer (#54) <input type="checkbox"/> See Addendum Cooler Information Form <input type="checkbox"/> Other # <u>1</u>
---	--	------------------------	--

Cooler #	Time	Cooler #	Time	Cooler #	Time
<u>Im 3030</u>	<u>1555</u>				
Custody Seals:					
<input checked="" type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact					
Coolant Location:					
<input type="checkbox"/> Dispensed / Top / Middle / Bottom					
Coolant/Temperature Taken Via:					
<input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Snow Ice / Avg 2-3 containers <input checked="" type="checkbox"/> None / Avg 2-3 containers					
Alternate Temperature Taken Via:					
<input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container					
Recorded °C	Correction Factor °C	Actual °C	Recorded °C	Correction Factor °C	Actual °C
Temp Blank:					
TB location: Representative / Not Representative					
1	21.2	-	21.2		
2	21.6	-	21.6		
3	19.9	-	19.9		
Average °C			Average °C		
20.7					
<input type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?					

If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form

<b>Paperwork Received</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Chain of Custody record(s)? If No, Initiated By _____ <input type="checkbox"/> Received for Lab Signed Date/Time? _____ <input type="checkbox"/> Shipping document? <input type="checkbox"/> Other _____ <b>COC Information</b> <input checked="" type="checkbox"/> Trimatrix COC <input type="checkbox"/> Other _____ COC ID Numbers: _____	<b>Check Sample Preservation</b> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> Average sample temperature < 6° C? <input type="checkbox"/> Was thermal preservation required? If "No", Project Chemist Approval Initials: _____ If "Yes", Completed Non-Con Cooler - Cont Inventory Form? <input checked="" type="checkbox"/> Completed Sample Preservation Verification Form? <input type="checkbox"/> Samples chemically preserved correctly? If "No", added orange tag? <input type="checkbox"/> Received pre-preserved VOC soils? <input type="checkbox"/> MeOH <input type="checkbox"/> NaSCN						
<b>Check COC for Accuracy</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> Analysis Requested? <input checked="" type="checkbox"/> Sample ID matches COC? <input checked="" type="checkbox"/> Sample Date and Time matches COC? <input checked="" type="checkbox"/> Container type completed on COC? <input checked="" type="checkbox"/> All container types indicated are received?	<b>Check for Short Hold-Time Prep/Analyses</b> <input type="checkbox"/> Bacteriological <input type="checkbox"/> Air Bags <input type="checkbox"/> EdCeres / Methanol Pre-Preserved <input type="checkbox"/> Fungicide/Aldehyde <input type="checkbox"/> Green-tagged containers <input type="checkbox"/> Yellow/White-tagged KL amber (SV Prep-Lab)						
<b>Sample Condition Summary</b> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> Broken containers/dags? <input type="checkbox"/> Missing or incomplete labels? <input type="checkbox"/> Illegible information on labels? <input type="checkbox"/> Low volume receiver? <input type="checkbox"/> Inappropriate or non-Trimatrix containers received? <input type="checkbox"/> VOC work / TOX containers have flags/dags? <input type="checkbox"/> Extra sample locations / containers not listed on COC?	<b>Notes</b> <input type="checkbox"/> Trip Blank received <input type="checkbox"/> Trip Blank not listed on COC <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Cooler Received (Date/Time)</td> <td>Paperwork Delivered (Date/Time)</td> <td>31 Hour Goal Met?</td> </tr> <tr> <td><u>8-22-12 1030</u></td> <td><u>8-22-12 1600</u></td> <td>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></td> </tr> </table>	Cooler Received (Date/Time)	Paperwork Delivered (Date/Time)	31 Hour Goal Met?	<u>8-22-12 1030</u>	<u>8-22-12 1600</u>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Cooler Received (Date/Time)	Paperwork Delivered (Date/Time)	31 Hour Goal Met?					
<u>8-22-12 1030</u>	<u>8-22-12 1600</u>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

Log In Form - Receiving Log-In Checklist

revision: 3.4


**SAMPLE PRESERVATION VERIFICATION FORM**

page \_\_\_\_ of \_\_\_\_

Client <b>Miosiac</b>	Work Order # <b>R1202383</b>
Receipt Log # <b>23-18</b>	Completed By (initials) <b>WC 8.22.12</b>
Project Chemist	

COC ID # <b>141895</b>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES				Ph Strip Lot # <input checked="" type="checkbox"/> <b>HC137671</b> <input type="checkbox"/>	
Container Type	5 / 25	4	13		3	6	15						
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe						
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>		None	HNO <sub>3</sub>	HNO <sub>3</sub>						
Expected pH	>12	<2	<2		6-8	<2	<2						
COC Line #1					✓	✓							
COC Line #2					✓	✓							
COC Line #3													
COC Line #4													
COC Line #5													
COC Line #6													
COC Line #7													
COC Line #8													
COC Line #9													
COC Line #10													
Comments													

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5	4	13		3	6	15				
Tag Color	Lt. Blue	Blue	Brown		Green	Red	Red Stripe				
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>		None	HNO <sub>3</sub>	HNO <sub>3</sub>				
Expected pH	>12	<2	<2		-7	<2	<2				
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											
Comments											

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H <sub>2</sub> SO <sub>4</sub>
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H <sub>2</sub> SO <sub>4</sub>
500	2.5

Log In Forms - Sample\_Preserve\_Verification

version: 2.0



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

September 10, 2012

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United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

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Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for August 2012

During the month of August, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 11 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 27 days this month.
- Cavity KCI 1060 was in operation for 17 days this month.
- Cavity KCI 2030 was in operation for 26 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 18 days this month.
- Cavity KCI 2062 was not in operation for this month.

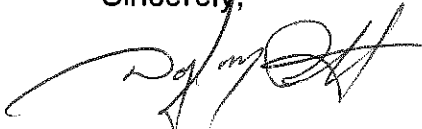
Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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CAVITY 1010

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Cavity 1010

Daily Averages

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Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in
15-Aug-12	shut in	shut in	shut in
16-Aug-12	shut in	shut in	shut in
17-Aug-12	shut in	shut in	shut in
18-Aug-12	shut in	shut in	shut in
19-Aug-12	shut in	shut in	shut in
20-Aug-12	shut in	shut in	shut in
21-Aug-12	shut in	shut in	shut in
22-Aug-12	shut in	shut in	shut in
23-Aug-12	shut in	shut in	shut in
24-Aug-12	shut in	shut in	shut in
25-Aug-12	shut in	shut in	shut in
26-Aug-12	shut in	shut in	shut in
27-Aug-12	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in
31-Aug-12	shut in	shut in	shut in

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✓ CAVITY 1020

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Cavity 1020

Daily Averages

UIC BRANCH  
EPA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	shut in	shut in	shut in
2-Aug-12	1130	136	155
3-Aug-12	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in
15-Aug-12	shut in	shut in	shut in
16-Aug-12	shut in	shut in	shut in
17-Aug-12	shut in	shut in	shut in
18-Aug-12	shut in	shut in	shut in
19-Aug-12	shut in	shut in	shut in
20-Aug-12	shut in	shut in	shut in
21-Aug-12	shut in	shut in	shut in
22-Aug-12	1171	227	253
23-Aug-12	1141	212	259
24-Aug-12	1136	35	41
25-Aug-12	1098	106	138
26-Aug-12	1165	207	235
27-Aug-12	✓ 1177	183	230
28-Aug-12	1118	241	320
29-Aug-12	1025	✓ 262	298
30-Aug-12	1074	239	268
31-Aug-12	1098	230	272

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Cavity 1020

Aug-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1121	189	224

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
27-Aug-12	1177	183

Minimum Injection Pressure and corresponding Injection Flow

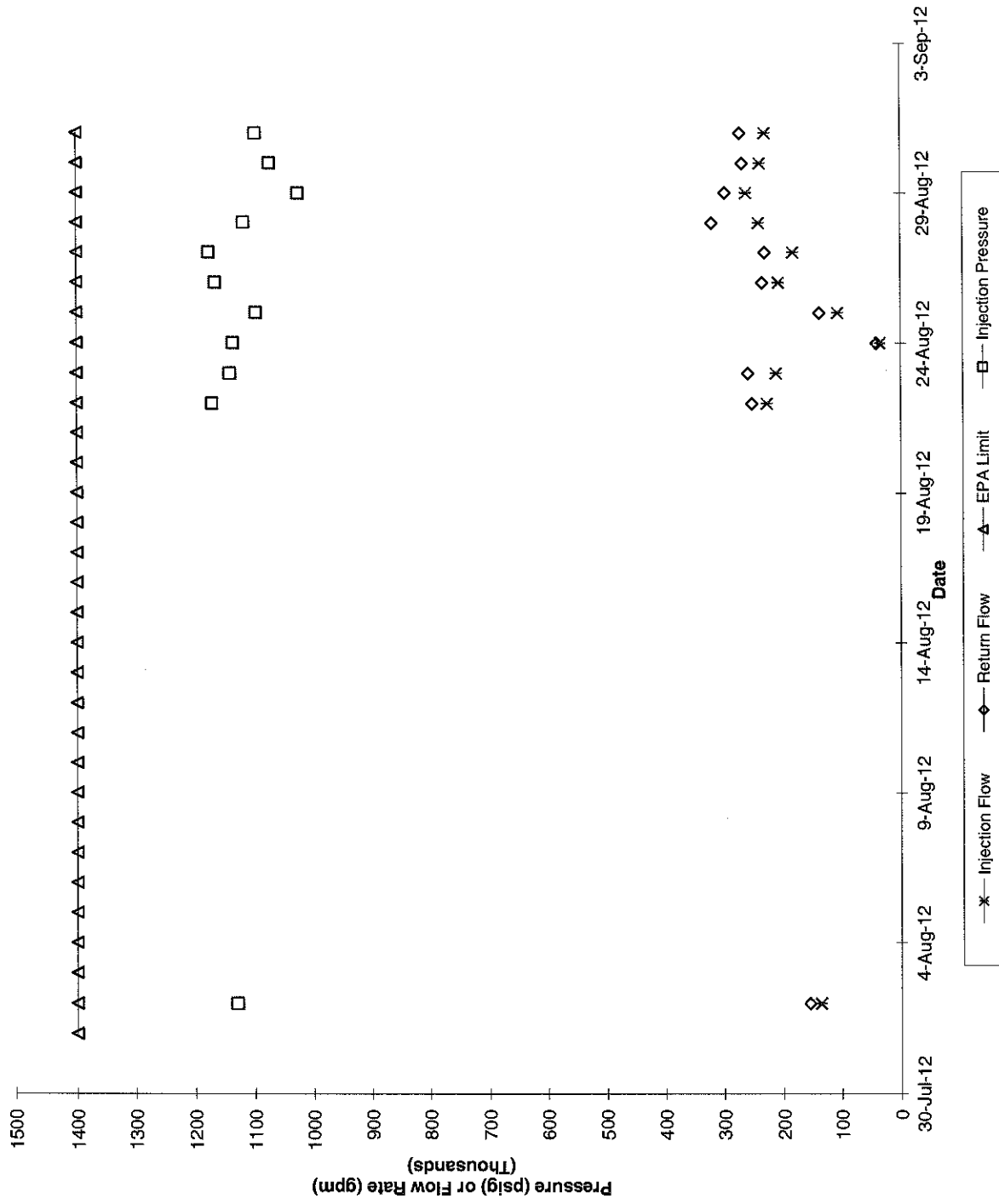
Date	Injection Pressure (psi)	Injection Flow (gpm)
29-Aug-12	1025	262

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
29-Aug-12	262	1025

# Solution Mining Permit ML-133-3G-A002

Cavity 1020 Pressures & Flow Rates



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CAVITY 1040

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Cavity 1040

## Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in
15-Aug-12	shut in	shut in	shut in
16-Aug-12	shut in	shut in	shut in
17-Aug-12	shut in	shut in	shut in
18-Aug-12	shut in	shut in	shut in
19-Aug-12	shut in	shut in	shut in
20-Aug-12	shut in	shut in	shut in
21-Aug-12	shut in	shut in	shut in
22-Aug-12	shut in	shut in	shut in
23-Aug-12	shut in	shut in	shut in
24-Aug-12	shut in	shut in	shut in
25-Aug-12	shut in	shut in	shut in
26-Aug-12	shut in	shut in	shut in
27-Aug-12	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in
31-Aug-12	shut in	shut in	shut in



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CAVITY 1050 ✓

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Cavity 1050

Daily Averages

UIC BRANCH  
EPA REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	1195	154	154
2-Aug-12	1153	160	160
3-Aug-12	1183	154	154
4-Aug-12	1188	169	169
5-Aug-12	1200	16	16
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	1150	244	244
11-Aug-12	1200	156	156
12-Aug-12	1195	154	154
13-Aug-12	1177	181	181
14-Aug-12	1160	195	195
15-Aug-12	1187	180	180
16-Aug-12	1193	170	170
17-Aug-12	1187	201	201
18-Aug-12	1173	193	193
19-Aug-12	1117	181	181
20-Aug-12	1187	172	172
21-Aug-12	1200	165	165
22-Aug-12	1183	143	143
23-Aug-12	1200	138	138
24-Aug-12	1200	23	23
25-Aug-12	1200	80	80
26-Aug-12	1195	160	160
27-Aug-12	1188	175	175
28-Aug-12	1200	203	203
29-Aug-12	1200	168	168
30-Aug-12	1200	149	149
31-Aug-12	1173	154	154

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Cavity 1050

Aug-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1185	157	157

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
5-Aug-12	✓ 1200	16

Minimum Injection Pressure and corresponding Injection Flow

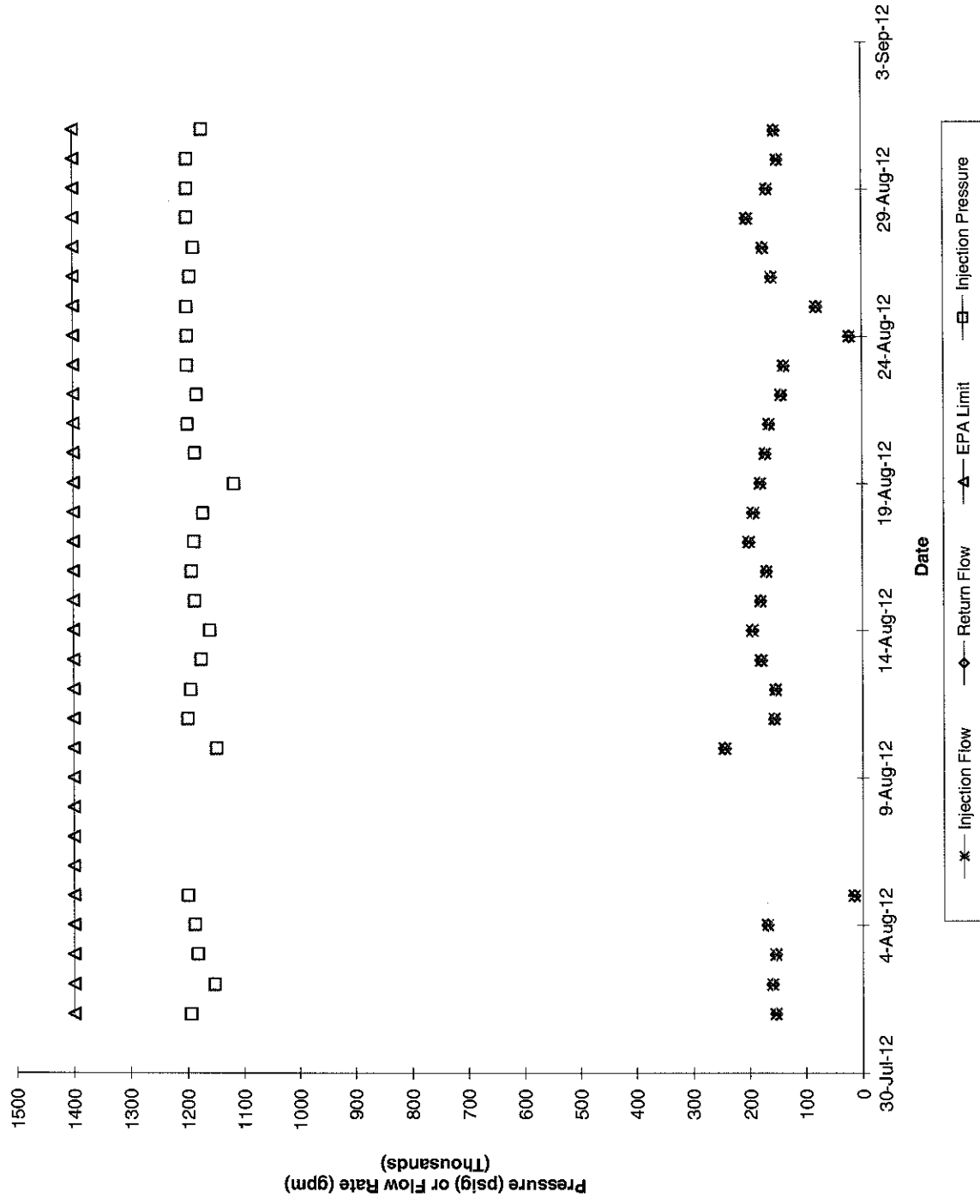
Date	Injection Pressure (psi)	Injection Flow (gpm)
19-Aug-12	1117	181

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
10-Aug-12	✓ 244	1150

# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



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CAVITY 1060

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Cavity 1060

Daily Averages

UIC BRANCH  
EPA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	1140	333	346
2-Aug-12	1141	333	338
3-Aug-12	1137	313	353
4-Aug-12	1139	354	357
5-Aug-12	1144	160	156
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	1058	146	360
11-Aug-12	1114	271	288
12-Aug-12	1149	299	278
13-Aug-12	1145	271	277
14-Aug-12	1138	285	282
15-Aug-12	1107	299	316
16-Aug-12	1074	285	315
17-Aug-12	1127	299	313
18-Aug-12	1099	354	320
19-Aug-12	1119	389	352
20-Aug-12	1114	306	361
21-Aug-12	1137	285	330
22-Aug-12	shut in	shut in	shut in
23-Aug-12	shut in	shut in	shut in
24-Aug-12	shut in	shut in	shut in
25-Aug-12	shut in	shut in	shut in
26-Aug-12	shut in	shut in	shut in
27-Aug-12	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in
31-Aug-12	shut in	shut in	shut in

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Cavity 1060

✓ Aug-12  
Monthly Averages

Injection Pressure  
1122

Injection Flow  
293

Return Flow  
314

✓ Maximum Injection Pressure and corresponding Injection Flow

Date  
12-Aug-12

Injection Pressure  
✓ 1149

Injection Flow  
299

Minimum Injection Pressure and corresponding Injection Flow

Date  
10-Aug-12

Injection Pressure  
1058

Injection Flow  
146

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

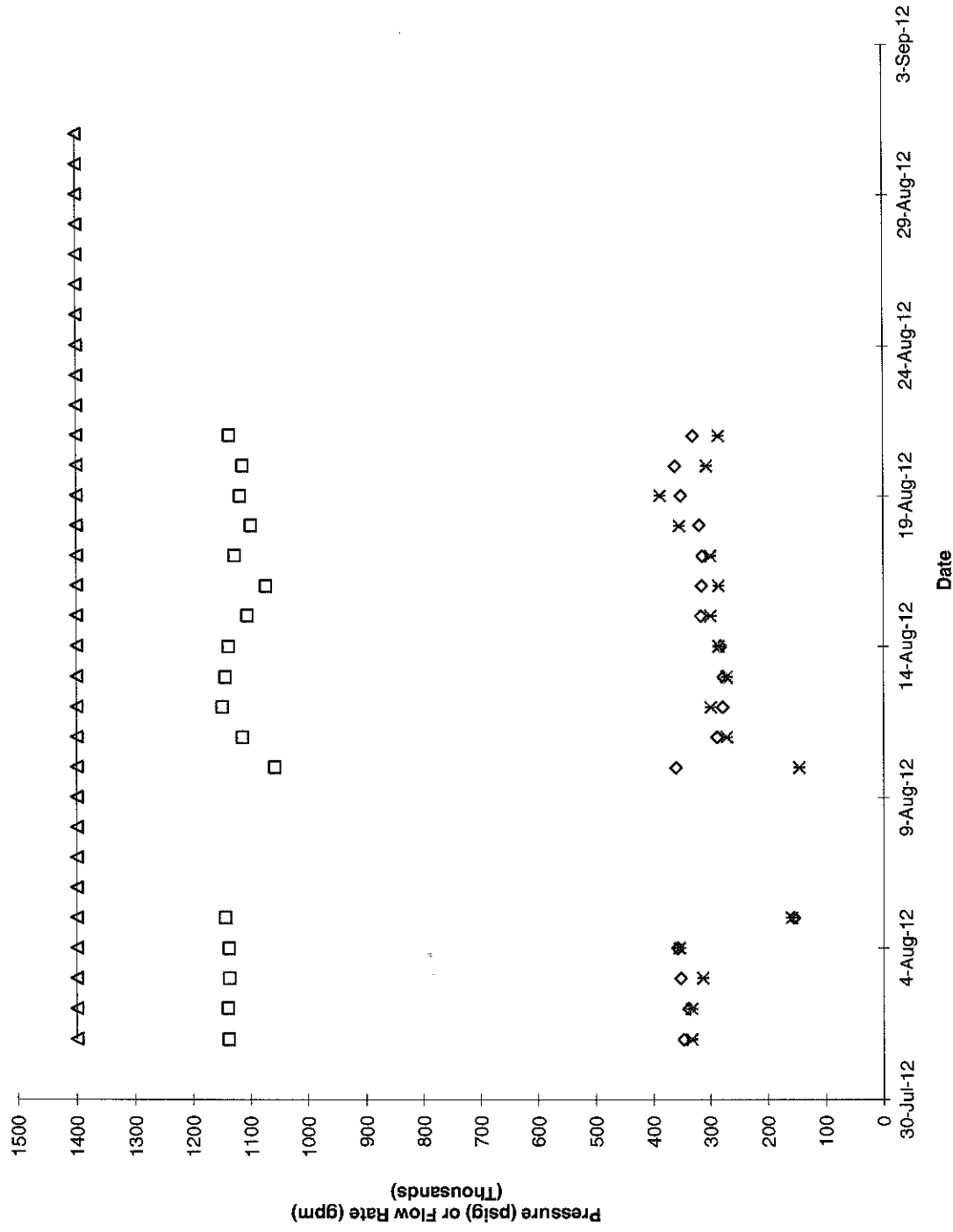
Date  
19-Aug-12

Injection Flow  
✓ 389

Injection Pressure  
1119

# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates





✓ CAVITY 2030

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Cavity 2030

Daily Averages

UIC BRANCH  
PA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	1195	207	207
2-Aug-12	1200	61	61
3-Aug-12	shut in	shut in	shut in
4-Aug-12	1188	245	245
5-Aug-12	1200	121	121
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	1150	149	149
11-Aug-12	1200	258	258
12-Aug-12	1195	240	240
13-Aug-12	1177	235	235
14-Aug-12	1160	265	265
15-Aug-12	1187	253	253
16-Aug-12	1193	267	267
17-Aug-12	1187	243	243
18-Aug-12	1173	278	278
19-Aug-12	1117	250	250
20-Aug-12	1187	250	250
21-Aug-12	1200	264	264
22-Aug-12	1183	250	250
23-Aug-12	1200	257	257
24-Aug-12	1200	69	69
25-Aug-12	1200	167	167
26-Aug-12	1195	215	215
27-Aug-12	1188	250	250
28-Aug-12	1200	260	260
29-Aug-12	1200	260	260
30-Aug-12	1200	236	236
31-Aug-12	1173	201	201

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SEP 13 2012

UIC BRANCH  
EPA, REGION 5

Cavity 2030

Aug-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1186	221	221

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
2-Aug-12	1200	61

Minimum Injection Pressure and corresponding Injection Flow

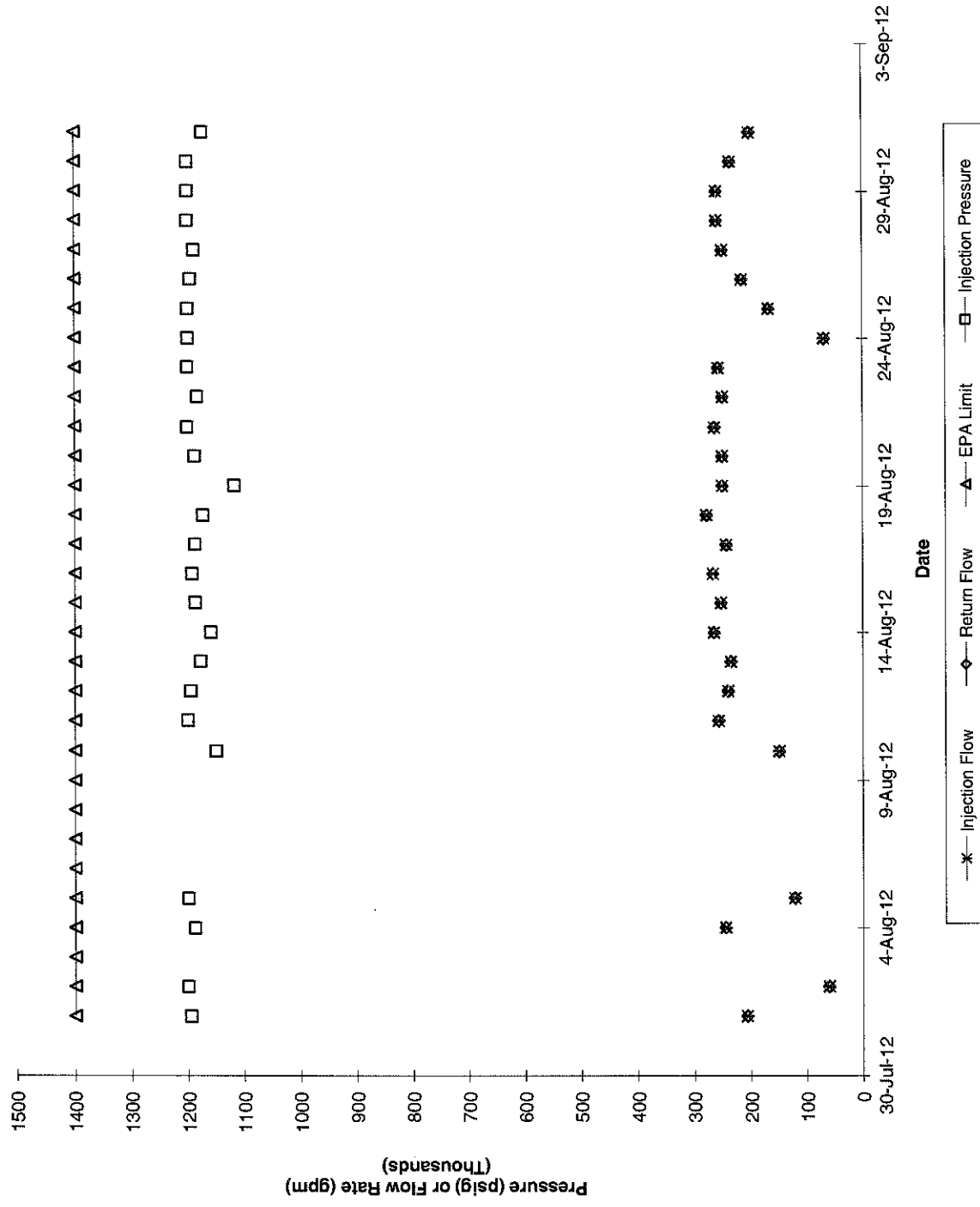
Date	Injection Pressure (psi)	Injection Flow (gpm)
19-Aug-12	1117	250

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
18-Aug-12	278	1173

# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



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✓ CAVITY 2040

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SEP 13 2012

Cavity 2040

Daily Averages

UIC BRANCH  
EPA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in
15-Aug-12	shut in	shut in	shut in
16-Aug-12	shut in	shut in	shut in
17-Aug-12	shut in	shut in	shut in
18-Aug-12	shut in	shut in	shut in
19-Aug-12	shut in	shut in	shut in
20-Aug-12	shut in	shut in	shut in
21-Aug-12	shut in	shut in	shut in
22-Aug-12	shut in	shut in	shut in
23-Aug-12	shut in	shut in	shut in
24-Aug-12	shut in	shut in	shut in
25-Aug-12	shut in	shut in	shut in
26-Aug-12	shut in	shut in	shut in
27-Aug-12	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in
31-Aug-12	shut in	shut in	shut in

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UIC BRANCH  
EPA, REGION 5

✓ CAVITY 2061

# RECEIVED

SEP 13 2012

Cavity 2061

Daily Averages

UIC BRANCH  
EPA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	1195	111	111
2-Aug-12	1153	94	94
3-Aug-12	1200	137	137
4-Aug-12	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in
11-Aug-12	1200	66	66
12-Aug-12	1200	44	44
13-Aug-12	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in
15-Aug-12	1190	36	36
16-Aug-12	1190	78	78
17-Aug-12	1180	99	99
18-Aug-12	1183	69	69
19-Aug-12	1117	163	163
20-Aug-12	1187	132	132
21-Aug-12	1200	61	61
22-Aug-12	1183	110	110
23-Aug-12	1200	102	102
24-Aug-12	1200	20	20
25-Aug-12	1200	47	47
26-Aug-12	1190	69	69
27-Aug-12	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in
31-Aug-12	1173	89	89



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Cavity 2061

Aug-12  
Monthly Averages

Injection Pressure (psi)  
1186

Injection Flow (gpm)  
85

Return Flow (gpm)  
85

Maximum Injection Pressure and corresponding Injection Flow

Date  
3-Aug-12

Injection Pressure (psi)  
1200

Injection Flow (gpm)  
137

Minimum Injection Pressure and corresponding Injection Flow

Date  
19-Aug-12

Injection Pressure (psi)  
1117

Injection Flow (gpm)  
163

Maximum Injection Flow Rate and corresponding Injection Pressure

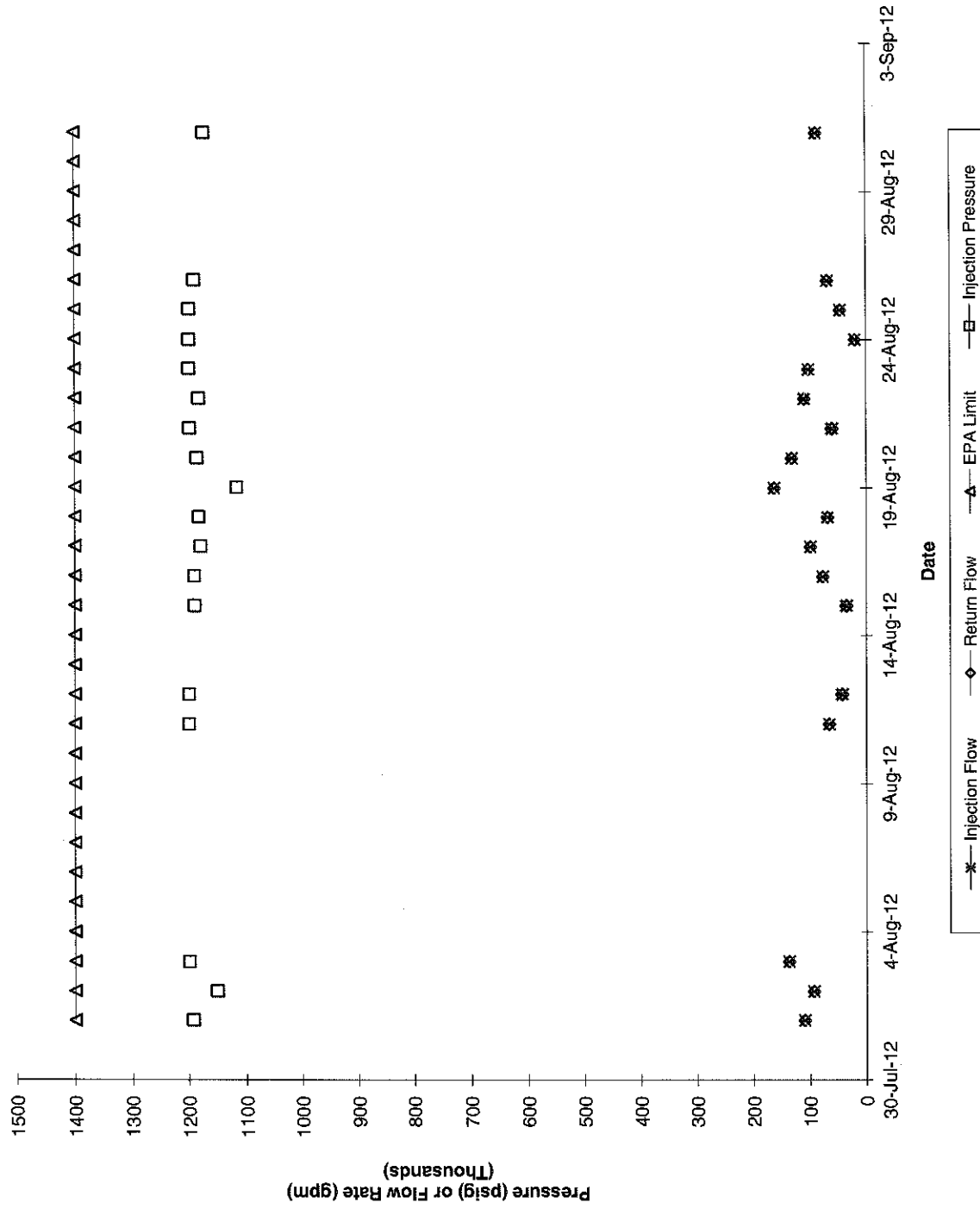
Date  
19-Aug-12

Injection Flow (psi)  
163

Injection Pressure (psi)  
1117

# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



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CAVITY 2062 ✓

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SEP 13 2012

Cavity 2062

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EPA, REGION 5

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Aug-12	shut in	shut in	shut in
2-Aug-12	shut in	shut in	shut in
3-Aug-12	shut in	shut in	shut in
4-Aug-12	shut in	shut in	shut in
5-Aug-12	shut in	shut in	shut in
6-Aug-12	shut in	shut in	shut in
7-Aug-12	shut in	shut in	shut in
8-Aug-12	shut in	shut in	shut in
9-Aug-12	shut in	shut in	shut in
10-Aug-12	shut in	shut in	shut in
11-Aug-12	shut in	shut in	shut in
12-Aug-12	shut in	shut in	shut in
13-Aug-12	shut in	shut in	shut in
14-Aug-12	shut in	shut in	shut in
15-Aug-12	shut in	shut in	shut in
16-Aug-12	shut in	shut in	shut in
17-Aug-12	shut in	shut in	shut in
18-Aug-12	shut in	shut in	shut in
19-Aug-12	shut in	shut in	shut in
20-Aug-12	shut in	shut in	shut in
21-Aug-12	shut in	shut in	shut in
22-Aug-12	shut in	shut in	shut in
23-Aug-12	shut in	shut in	shut in
24-Aug-12	shut in	shut in	shut in
25-Aug-12	shut in	shut in	shut in
26-Aug-12	shut in	shut in	shut in
27-Aug-12	shut in	shut in	shut in
28-Aug-12	shut in	shut in	shut in
29-Aug-12	shut in	shut in	shut in
30-Aug-12	shut in	shut in	shut in
31-Aug-12	shut in	shut in	shut in



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639  
www.mosaicco.com

Tel 231-832-8800  
Fax 231-832-3349

September 19<sup>th</sup>, 2012

RECEIVED

Lisa Perenchio, Chief  
Underground Injection Control Branch  
United States Environmental Protection Agency  
77 W. Jackson Blvd, WU-16J  
Chicago, IL 60604-3590

SEP 21 2012

UIC BRANCH  
EPA, REGION 5

RE: M-475 / MI-133-3G-A002  
Part I MIT on Well KCL 1062

The Part 1 Mechanical Integrity Test was passed for Well 1062 on September 7<sup>th</sup>, 2012. The EPA did not witness the test per instructions from Jeff McDonald of USEPA. No representative from the Michigan Department of Environmental Quality was present to witness the test. The DEQ Annular Pressure Test form completed by authorized on-site personnel is enclosed. The USEPA Standard Annular Pressure Test form for an un-witnessed test is enclosed, along with the calibration certification for the pressure gauge that was used.

If you need additional information, please contact me at 231-832-8824 or [douglas.patulski@mosaicco.com](mailto:douglas.patulski@mosaicco.com).

Sincerely,

Douglas M. Patulski  
Minefield Superintendent  
Mosaic Potash Hersey

Cc: Raymond Vugrinovich, Michigan Department of Environmental Quality

## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

## STANDARD ANNULAR PRESSURE TEST

Operator MOAIC POTASH HERSEYState Permit No. M-475Address 1395 135TH AVEUSEPA Permit No. MT-133-36-A002HERSEY, MI 49639Date of Test 09/07/12Well Name MOAIC 1062Well Type IIILOCATION INFORMATION NE Quarter of the SE Quarter of the NE QuarterSection 26; Range 09W; Township 17N; County OSCEOLA;Company Representative Bill Hicks; Field Inspector NONE;Type of Pressure Gauge Digital inch face; 0-3000 psi full scale; 0.0000 psi increments;New Gauge? Yes ~ (No) If no, date of calibration 6/26/2012Calibration certification submitted? (Yes) ~ No ~

## TEST RESULTS

5-year or annual test on time? (Yes) ~ No ~

After rework? Yes ~ No ~

Newly permitted well? Yes ~ No ~

## Pressure (in psig)

Time	Annulus	Tubing
<u>11:45</u>	<u>961.0764</u>	<u>NONE</u>
<u>11:50</u>	<u>960.0512</u>	
<u>11:55</u>	<u>959.0126</u>	
<u>12:00</u>	<u>957.9124</u>	
<u>12:05</u>	<u>956.8012</u>	
<u>12:10</u>	<u>955.6924</u>	
<u>12:15</u>	<u>954.3816</u>	

Casing size 7" - 23"Tubing size NONEPacker type BRIDGE PLUGPacker set @ 6151'Fluid return (gal.) N/A

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x .03 28.83 psiHalf Hour Pressure change -6.694 psi(Test Passed) ~ Test Failed ~

If failed test, well must shut in, no injection can occur, and USEPA must be contacted within 24 hours.

Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

Bill Hicks

Signature of Company Representative

09/07/2012

Date

UNWITNESSED MECHANICAL INTEGRITY TEST FORM



By authority of Part 615 or Part 625 of  
Act 451 PA 1994, as amended.  
Non-submission and/or falsification of this information  
may result in fines and/or imprisonment.

## TEST DATA

Comments

**Set Bridge Plug @ 6151' . Complete unwitnessed MIT. Will complete part 2 MIT Monday September 10<sup>th</sup> and send results.**

Certification if witnessed by DEQ representative:

Signature of DEQ employee

Date \_\_\_\_\_

Certification if not witnessed by DEQ representative: "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Signature

Date \_\_\_\_\_

MAIL TO: OFFICE OF GEOLOGICAL SURVEY  
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

## CERTIFICATE OF CONFORMANCE

CUSTOMER:

MOSAIC POTASH HERSEY

PURCHASE ORDER:

CHARGE

DIGIQUARTZ MODEL:

765-3K

PART NUMBER:

1100-019-0

SERIAL NUMBER(S):

105210

*PAROSCIENTIFIC INCORPORATED certifies that the part(s) identified above complies with the requirements of the above order and has been manufactured in accordance with engineering drawings, material and process specifications, testing procedures, and applicable specification drawing of Paroscientific Incorporated. The Digiquartz model(s) identified has been calibrated and tested over the specified pressure and temperature range and meets the requirements of the applicable specification drawing. Primary pressure, temperature standards and transfer standards used at Paroscientific Incorporated for calibration and testing have traceability to the National Institute of Standards and Technology and are regularly checked and calibrated according to Paroscientific QA Procedure Q8521, Inspection Test and Measurement Equipment, in accordance with the requirements of ISO 9001:2008.*



AUTHORIZED SIGNATURE

Warren Schuchman, Quality Assurance Manager

6/26/12

DATE



**Technology**

Precision Pressure Instrumentation

Document no. T8148, Rev "AU", 11 Oct 2011 page 1 of 2



## CERTIFICATION OF TRACEABILITY TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

*Primary pressure and temperature standards used in the calibration and testing of Paroscientific Digiquartz Models have traceability to the National Institute of Standards and Technology through the following documentation.*

### Bell and Howell Primary Pressure Standard:

Bell and Howell, Model 6-201-0001, Piston/Cylinder P2-919/C2-1523 via DH Calibration Report No. 15441 and 16653 traceable to NIST. Weight Set 1, P/N 6-002-0002, via DH Calibration Report No. 14481, 16654 and 1284473284 traceable to NIST. Weight Set 2, P/N 6-002-0002, via DH Calibration Report No. 14576, 16603, 31227, 39628, 68390 and 1317389777 traceable to NIST. Piston/Cylinder P2-652/C2-1378 via DH Instruments Calibration Report No. 14575, 16602, 31226, 39627, 68389 and 1317739617 traceable to NIST. Piston/Cylinder P1-231/C1-384 via DH Instruments Calibration Report No. 13170 and 1284475131 traceable to NIST. Piston/Cylinder P/N 6-201, No. P1-949/C1-922, via DH Instruments Calibration Report 17176 and 17445, traceable to NIST.

### DH Primary Pressure Standard, Oil Operated Gauge:

DH Instruments, Model 5306, Piston/Cylinder S/N 3375, via DH Calibration Certificate Report No. 8398, 22146, 32354, 45306, 66563 and 1305698573 traceable to NIST. Piston/Cylinder 3511 via DH Calibration Report No. 8399, 22147, 32353, 45307, 66562 and 1305625084 traceable to NIST. Mass Set S/N 2032 via DH Calibration Report No. 24809, 24826, 45305, 45308, 1305538925 and 1305530461 traceable to NIST.

### DH Primary Pressure Standard, Pneumatic Operated Gauge:

DH Instruments, Model 5203, Piston/Cylinder S/N 4845, via DH Calibration Certificate No. 8541, 27161, 38275 and 1300177141 traceable to NIST. Mass Set S/N 2032/3293 via DH Calibration Certificate Nos. 4630, 24809, 8540, 32142, 45305 and 1300200369 traceable to NIST.

### DH Primary Pressure Standard, Pneumatic Operated Gauge:

DH instruments, Model PG7601 via DH Instruments Calibration No. 32162, 41492 and 69127 traceable to NIST. Piston/Cylinder S/N 305 via DH Instruments Calibration No. 20281, 32161, 41490 and 69125 traceable to NIST. DH Instruments 35 kg Mass Set No. 2052 and Bell No. 261A via DH Instruments Calibration Report No. 20282, 32163, 32164, 41491, 41493, 69126 and 69124 traceable to NIST.

### Hygroclip S3 MET4/4A Part number 1560-XXX and 1561-XXX:

Humidity and Temperature calibrations are traceable to NIST through Rotronic Instrument Corporation; 160 E. Main Street, Huntington, NY 11743.

### Hygroclip HC2-S3 MET4/4A Part number 1563-XXX and 1564-XXX Swiss Calibration Service (SCS)

Humidity and Temperature calibrations are traceable to SCS through Rotronic AG Grindelstrasse 6 8303 Bassersdorf Phone: 044-838-1111 E-mail: info@rotronic.ch



**Technology**

**Precision Pressure Instrumentation**

Document no. T8148, Rev "AU", 11 Oct 2011 page 2 of 2

## CERTIFICATE OF CALIBRATION

DIGIQUARTZ MODEL: 765-3K

SERIAL NUMBER(S): 105210

The Paroscientific Digiquartz Model (s) identified above has been calibrated and tested with one or more of the following primary pressure standards. All have traceability to the National Institute of Standards and Technology.

### Bell and Howell Primary Pressure Standard

Pneumatic Absolute or Gauge Dead Weight Tester Part Number: 6-201-0001, S/N 4034 and S/N 1014

- |                                     |  |                          |  |
|-------------------------------------|--|--------------------------|--|
| <input type="checkbox"/>            | Piston/Cylinder: 6-001-0002, P2-919/C2-1523,<br>Weight Set 1: 6-002-0002<br>Range: 1.5 to 50 psi [10 to 345 kPa]<br>Accuracy: 0.010 percent of reading | <input type="checkbox"/> | Piston/Cylinder: 6-001-0001, P1-949/C1-922, Weight Set<br>2: 6-002-0002<br>Range: 0.3 to 5 psi [2 to 34 kPa]<br>Accuracy: 0.015 percent of reading |
| <input checked="" type="checkbox"/> | Piston/Cylinder: 6-001-0002, P2-652/C2-1378,<br>Weight Set 2: 6-002-0002<br>Range: 1.5 to 50 psi [10 to 345 kPa]<br>Accuracy: 0.010 percent of reading |                          |  |

### DH Primary Pressure Standard

Pneumatic Absolute or Gauge Dead Weight Tester Part Number: PG7601 S/N 161

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Piston/Cylinder: S/N 305, Mass Set: S/N 2052<br>Range: 0.7 to 50 psi [5 to 345 kPa] absolute mode, 0.29 to 50 psi [2 to 345 kPa] gauge mode<br>Accuracy: 0.002 percent of reading |
|--------------------------|---|

### DH Primary Pressure Standard

Pneumatic Gauge Dead Weight Tester, Model 5203, S/N 5557

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Piston/Cylinder: S/N 4845, Mass Sets: S/N 2032, S/N 3293<br>Range: 20 to 1,600 psi [0.14 to 11 MPa]<br>Accuracy: 0.005 percent of reading |
|--------------------------|---|

### DH Primary Pressure Standard

Oil Operated Gauge Dead Weight Tester, Model 5306, S/N 3505

- |                                     |  |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Piston/Cylinder: S/N 3375, Mass Set: S/N 2032<br>Range: 40 to 20,000 psi [0.3 to 138 MPa]<br>Accuracy: 0.01 percent of reading above 200 psi [1.4 MPa]<br>or 0.02 psi [0.14 kPa] at lower pressure |
| <input type="checkbox"/>            | Piston/Cylinder: S/N 3511, Mass Set: S/N 2032<br>Range: 145 to 72,500 psi [1 to 500 MPa]<br>Accuracy: 0.02 percent of reading above 725 psi [5 MPa]<br>or 0.145 psi [1 kPa] at lower pressure      |

Tested By: 

DATE: 6/26/12



**Paroscientific, Inc.**  
**Pressure Instrument Configuration**

SN: 105210 Part Number: 1100-019-0 Model: 765-3K Port: Oil Filled  
Calibration Date: 26-Jun-12 Report No: 14293 Technician: RM  
Pressure Range: 0 to 3000 psia Temperature Range: 0 to 40 deg C  
Customer: Mosaic Potash Hersey Report Date: 26-Jun-12  
Address : 1395 135th Avenue Sales Order: 30096  
Hersey, MI 49639 USA S/R Number : 10251

Configuration		Calibration Coefficients	
BL: 0	PT: N	U0: 5.813680 $\mu$ sec	
BR: 9600	QD: -	Y1: -3958.154 deg C / $\mu$ sec	
DD: -	QO: -	Y2: -13865.89 deg C / $\mu$ sec <sup>2</sup>	
DL: 0	SL: -	Y3: -138805.8 deg C / $\mu$ sec <sup>3</sup>	
DM: 0	SN: 105210	C1: -14414.57 psi	
DO: -	ST: -	C2: -99.30154 psi / $\mu$ sec	
DP: 6	SU: 0	C3: 48299.55 psi / $\mu$ sec <sup>2</sup>	
ID: 07	TI: 4670	D1: 0.0446906	
IM: -	TR: 952	D2: 0.0000000	
LL: -	TU: 0	T1: 30.00206 $\mu$ sec	
LH: -	UF: 1.000000	T2: 0.820646 $\mu$ sec / $\mu$ sec	
MC: Y	UL:	T3: 54.13041 $\mu$ sec / $\mu$ sec <sup>2</sup>	
MD: 1	UM: USER	T4: 71.54495 $\mu$ sec / $\mu$ sec <sup>3</sup>	
MN: 765-3K	UN: 1	T5: 2095.804 $\mu$ sec / $\mu$ sec <sup>4</sup>	
OP: -	US: 0	TC: 0.6781528	
PF: 3000.000	VR: P1.06	PA: -0.3538370	
PI: 4670	ZI: 0	PM: 0.9999510	
PL: 3600.000	ZS: 0		
PO: 0	ZL: 0		
PR: 238	ZV: .0000000		
PS: 0			
AL: .0000000			
AU: 3000.000			
GD: 0			
GT: 0			
LW: 0			
PC: .9999510			
PX: 5			
RS: 1			
RU: -			

Paroscientific, Inc.  
4500 148th Ave. N.E. Redmond, WA 98052  
Phone: (425)883-8700 Fax: (425)867-5407  
Web: <http://www.paroscientific.com>  
Email: [support@paroscientific.com](mailto:support@paroscientific.com)

Prepared by



**Technology**



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639  
www.mosaicco.com

Tel 231-832-8800  
Fax 231-832-3349

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JAN 02 2013

**UIC BRANCH  
EPA, REGION 5**

December 28<sup>th</sup>, 2012

Lisa Perenchio, Chief  
Underground Injection Control Branch  
United States Environmental Protection Agency  
77 W. Jackson Blvd, WU-16J  
Chicago, IL 60604-3590

RE: Permit No. MI-133-3G-A002 / M448 (M469) and M449  
Part I MIT on Wells 2041 and 2042

The Part 1 Mechanical Integrity Tests were passed for Wells 2041 (2041A) and 2042 on December 21<sup>st</sup> and December 14<sup>th</sup>, 2012, respectively. The EPA did not witness the test per instructions from Jeff McDonald of USEPA. Mr. Stafford Dusenbury of the Michigan Department of Environmental Quality was present to witness the tests. The DEQ Annular Pressure Test forms completed by Mr. Dusenbury are enclosed. The USEPA Standard Annular Pressure Test forms for an un-witnessed test are enclosed, along with the calibration certification for the pressure gauge that was used.

If you need additional information, please contact me at 231-832-8824 or [douglas.patulski@mosaicco.com](mailto:douglas.patulski@mosaicco.com).

Sincerely,

Douglas M. Patulski  
Minefield Superintendent  
Mosaic Potash Hersey

Cc: Raymond Vugrinovich, Michigan Department of Environmental Quality



## ANNULAR PRESSURE TEST

By authority of Part 615 or Part 625 of  
Act 451 PA 1994, as amended.  
Non-submission and/or falsification of this information  
may result in fines and/or imprisonment.

Name and address of permittee <b>Mosaic Potash Hersey</b> 1395 135th Avenue Hersey, MI 49639	Permit Number <b>M469 /MI-133-3G-A002</b>	
	Well name & No. <b>IMC Potash Hersey No. 2041A</b>	
	Surface location <b>SE 1/4 of NW 1/4 of SW 1/4, Section 26 T 17N R 09W</b>	
Township <b>Hersey</b>	County <b>Osceola</b>	
	Well type Part 615 <input type="checkbox"/> Secondary recovery <input type="checkbox"/> Brine disposal Part 625 <input type="checkbox"/> Waste disposal <input checked="" type="checkbox"/> Solution mining	
Date of test <b>12-21-12</b>	Casing <b>7", 23#, L-80 7734 feet</b>	Tubing
Type of gauge inch face      psi range New gauge <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <b>Disignate Portable Standard.</b> if no, enter date of test calibration	Packer type/model <b>development manfrib</b>	Packer depth <b>6920</b>
Average rate during injection	Type of non-corrosive liquid in the annulus Maximum allowed injection pressure	

## TEST DATA

Pressure readings (psig)					
Time	Annulus	tubing	Time	Annulus	tubing
1255	1042.67	1040	<b>RECEIVED</b>  JAN 02 2013  <b>UIC BRANCH</b> <b>EPA, REGION 5</b>		
100 PM	1042.61	1040			
105	1042.49	1040			
110	1042.40	1040			
115	1042.32	1040			
120	1042.20	1040			
125	1042.10	1040			

Comments

section mill 7020-7030

Certification if witnessed by DEQ representative:

Signature of DEQ employee

Date

12-21-12

Certification if not witnessed by DEQ representative: "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Signature

Date

12-21-12

MAIL TO: OFFICE OF GEOLOGICAL SURVEY  
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
PO BOX 30256  
LANSING MI 48909-7756

## ANNULAR PRESSURE TEST

By authority of Part 615 or Part 625 of  
Act 451 PA 1994, as amended.  
Non-submission and/or falsification of this information  
may result in fines and/or imprisonment.

<p>By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended.</p> <p>Non-submission and/or falsification of this information may result in fines and/or imprisonment.</p>		<p>Permit Number <b>M449 /MI-133-3G-A002</b></p>	
		<p>Well name &amp; No. <b>IMC Potash Hersey No. 2042</b></p>	
		<p>Surface location <b>SE 1/4 of NW 1/4 of SW 1/4, Section 26 T 17N R 09W</b></p>	
<p>Name and address of permittee <b>Mosaic Potash Hersey 1395 135th Avenue Hersey, MI 49639</b></p>		<p>Township <b>Hersey</b></p>	
		<p>County <b>Osceola</b></p>	
		<p>Well type</p> <p>Part 615 <input type="checkbox"/> Secondary recovery <input type="checkbox"/> Brine disposal</p> <p>Part 625 <input type="checkbox"/> Waste disposal <input checked="" type="checkbox"/> Solution mining</p>	
<p>Date of test <b>12-14-12</b></p>		<p>Casing <b>7", 23#, L-80 7797 feet</b></p>	
		<p>Tubing <b>4 1/2" 11.6#</b></p>	
<p>Type of gauge <b>Digiquartz 2 Portable standard Model 765</b></p>		<p>Packer type/model <b>Development Mandril</b></p>	
<p>inch face      psi range</p>		<p>Packer depth <b>6865</b></p>	
<p>New gauge <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No if no, enter date of test calibration <b>Reconditioned June 2012</b></p>		<p>Type of non-corrosive liquid in the annulus <b>saturated brine &amp; water</b></p>	
<p>Average rate during injection <b>well shut in.</b></p>		<p>Maximum allowed injection pressure</p>	

## TEST DATA

[illegible]

## Comments

Annulus bled after test. Fluid return to collar

Certification if witnessed by DEQ representative:

Signature of DEQ employee

representative: Stafford V. Rosenberg

Date 12-14-12

Certification if not witnessed by DEQ representative: "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Signature

facts stated herein are true  
 Bill Smith

Date \_\_\_\_\_

12/14/12

MAIL TO: OFFICE OF GEOLOGICAL SURVEY  
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
PO BOX 30256  
LANSING MI 48909-7756

## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

## STANDARD ANNULAR PRESSURE TEST

Operator MOSAIC POTASH HERSEYState Permit No. M-448 (M-469)Address 1395 135TH AVEUSEPA Permit No. MI-133-36-A002HERSEY, MI 49639Date of Test 12-21-12Well Name MOSAIC 2041 (2041A)Well Type IIILOCATION INFORMATION SE Quarter of the NW Quarter of the SW QuarterSection 26; Range 09 W; Township 17 N; County OSCEOLA;Company Representative BILL HELMS; Field Inspector STAFFORD DUSENBURY (MDEQ)Type of Pressure Gauge DIGITAL inch face; 3000 psi full scale; 0.000 psi increments;New Gauge? Yes ~ No If no, date of calibration 6/26/12Calibration certification submitted? Yes No ~

## TEST RESULTS

5-year or annual test on time? Yes No ~

After rework? Yes ~ No ~

Newly permitted well? Yes ~ No ~

## Pressure (in psig)

Time	Annulus	Tubing
<u>12:05</u>	<u>1042.67</u>	<u>1040</u>
<u>13:00</u>	<u>1042.61</u>	<u>1040</u>
<u>13:05</u>	<u>1042.49</u>	<u>1040</u>
<u>13:10</u>	<u>1042.40</u>	<u>1040</u>
<u>13:15</u>	<u>1042.32</u>	<u>1040</u>
<u>13:20</u>	<u>1042.20</u>	<u>1040</u>
<u>13:25</u>	<u>1042.10</u>	<u>1040</u>

Casing size 7"Tubing size 4 1/2Packer type NONEPacker set @ NONEFluid return (gal.) N/A

Comments:

TESTED AGAINST FORMATION  
7020'Test Pressures: Max. Allowable Pressure Change: Initial test pressure x .03 31.280 psiHalf Hour Pressure change .57 psiTest Passed Test Failed ~

If failed test, well must shut in, no injection can occur, and USEPA must be contacted within 24 hours.

Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

Bill Helms

Signature of Company Representative

12/21/12

Date

## UNWITNESSED MECHANICAL INTEGRITY TEST FORM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
STANDARD ANNULAR PRESSURE TEST

Operator MOAIC POTASH

State Permit No. M-449

Address 1395 135th AVE

USEPA Permit No. MI-133-36-A002

HELEIX, MI 49639

Date of Test 12-14-12

Well Name MOAIC 2042

Well Type III

LOCATION INFORMATION SE Quarter of the NW Quarter of the SW Quarter of Section 26; Range 09 W; Township 17 N; County OSCEOLA;

Company Representative Bill Hicks; Field Inspector Stafford Dusenbury MDER

Type of Pressure Gauge Parascientific Digital inch face; 3000 psi full scale; 0.0000 psi increments;

New Gauge? Yes ☐ No ☒ If no, date of calibration 6/24/12 Calibration certification submitted? Yes ☒ No ☐

**TEST RESULTS**

Readings must be taken at least every 10 minutes for a minimum of 30 minutes for Class II, III and V wells and 60 minutes for Class I wells.

For Class II wells, annulus pressure should be at least 300 psig. For Class I wells, annulus pressure should be the greater of 300 psig or 100 psi above maximum permitted injection pressure.

Original chart recordings must be submitted with this form.

5-year or annual test on time? Yes ☒ No ☐

2-year test for TA'd wells on time? Yes ☐ No ☐

After rework? Yes ☐ No ☐

Newly permitted well? Yes ☐ No ☐

	Pressure (in psig)	
Time	Annulus	Tubing
<u>13:45</u>	<u>1024.26</u>	<u>1050</u>
<u>13:50</u>	<u>1023.94</u>	
<u>13:55</u>	<u>1023.58</u>	
<u>14:00</u>	<u>1023.38</u>	
<u>14:05</u>	<u>1023.18</u>	
<u>14:10</u>	<u>1023.00</u>	
<u>14:15</u>	<u>1022.82</u>	
		↓

Casing size 7" 23#  
Tubing size 4 1/2" 11.6#  
Packer type NONE  
Packer set @ NONE - TESTED AGAINST LEAKAGE  
Top of Permitted Injection Zone 5765  
Is packer 100 ft or less above top of  
Injection Zone? Yes ☐ No ☐  
If not, please submit a justification.  
Fluid return (gal.) N/A

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x 0.03 30.7278 psi  
Test Period Pressure change 1.44 psi

Test Passed ☒ Test Failed ☐

If failed test, well must be shut in, no injection can occur, and USEPA must be contacted within 24 hours. Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

I certify under penalty of law that this document and all attachments are, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. (See 40 CFR 144.32(d))

Bill Hicks  
Printed Name of Company Representative

[Signature]  
Signature of Company Representative

12-18-12  
Date



## CERTIFICATE OF CONFORMANCE

CUSTOMER:

MOSAIC POTASH HERSEY

PURCHASE ORDER:

CHARGE

DIGIQUARTZ MODEL:

765-3K

PART NUMBER:

1100-019-0

SERIAL NUMBER(S):

105210

*PAROSCIENTIFIC INCORPORATED certifies that the part(s) identified above complies with the requirements of the above order and has been manufactured in accordance with engineering drawings, material and process specifications, testing procedures, and applicable specification drawing of Paroscientific Incorporated. The Digiquartz model(s) identified has been calibrated and tested over the specified pressure and temperature range and meets the requirements of the applicable specification drawing. Primary pressure, temperature standards and transfer standards used at Paroscientific Incorporated for calibration and testing have traceability to the National Institute of Standards and Technology and are regularly checked and calibrated according to Paroscientific QA Procedure Q8521, Inspection Test and Measurement Equipment, in accordance with the requirements of ISO 9001:2008.*



AUTHORIZED SIGNATURE

6/26/12

DATE

Warren Schuchman, Quality Assurance Manager



**Technology**

Precision Pressure Instrumentation

Document no. T8148, Rev "AU", 11 Oct 2011 page 1 of 2

## CERTIFICATION OF TRACEABILITY TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

*Primary pressure and temperature standards used in the calibration and testing of Paroscientific Digiquartz Models have traceability to the National Institute of Standards and Technology through the following documentation.*

### Bell and Howell Primary Pressure Standard:

Bell and Howell, Model 6-201-0001, Piston/Cylinder P2-919/C2-1523 via DH Calibration Report No. 15441 and 16653 traceable to NIST. Weight Set 1, P/N 6-002-0002, via DH Calibration Report No. 14481, 16654 and 1284473284 traceable to NIST. Weight Set 2, P/N 6-002-0002, via DH Calibration Report No. 14576, 16603, 31227, 39628, 68390 and 1317389777 traceable to NIST. Piston/Cylinder P2-652/C2-1378 via DH Instruments Calibration Report No. 14575, 16602, 31226, 39627, 68389 and 1317739617 traceable to NIST. Piston/Cylinder P1-231/C1-384 via DH Instruments Calibration Report No. 13170 and 1284475131 traceable to NIST. Piston/Cylinder P/N 6-201, No. P1-949/C1-922, via DH Instruments Calibration Report 17176 and 17445, traceable to NIST.

### DH Primary Pressure Standard, Oil Operated Gauge:

DH Instruments, Model 5306, Piston/Cylinder S/N 3375, via DH Calibration Certificate Report No. 8398, 22146, 32354, 45306, 66563 and 1305698573 traceable to NIST. Piston/Cylinder 3511 via DH Calibration Report No. 8399, 22147, 32353, 45307, 66562 and 1305625084 traceable to NIST. Mass Set S/N 2032 via DH Calibration Report No. 24809, 24826, 45305, 45308, 1305538925 and 1305530461 traceable to NIST.

### DH Primary Pressure Standard, Pneumatic Operated Gauge:

DH Instruments, Model 5203, Piston/Cylinder S/N 4845, via DH Calibration Certificate No. 8541, 27161, 38275 and 1300177141 traceable to NIST. Mass Set S/N 2032/3293 via DH Calibration Certificate Nos. 4630, 24809, 8540, 32142, 45305 and 1300200369 traceable to NIST.

### DH Primary Pressure Standard, Pneumatic Operated Gauge:

DH instruments, Model PG7601 via DH Instruments Calibration No. 32162, 41492 and 69127 traceable to NIST. Piston/Cylinder S/N 305 via DH Instruments Calibration No. 20281, 32161, 41490 and 69125 traceable to NIST. DH Instruments 35 kg Mass Set No. 2052 and Bell No. 261A via DH Instruments Calibration Report No. 20282, 32163, 32164, 41491, 41493, 69126 and 69124 traceable to NIST.

### Hygroclip S3 MET4/4A Part number 1560-XXX and 1561-XXX:

Humidity and Temperature calibrations are traceable to NIST through Rotronic Instrument Corporation; 160 E. Main Street, Huntington, NY 11743.

### Hygroclip HC2-S3 MET4/4A Part number 1563-XXX and 1564-XXX Swiss Calibration Service (SCS)

Humidity and Temperature calibrations are traceable to SCS through Rotronic AG Grindelstrasse 6 8303 Bassersdorf Phone: 044-838-1111 E-mail: info@rotronic.ch



# Paroscientific, Inc.

An ISO9001:2008 registered company

4500 148th Avenue N.E. Facsimile: (425) 867-5407  
Redmond, WA 98052-5194 Email: support@paroscientific.com  
Telephone: (425) 883-8700 Internet: http://www.paroscientific.com

## CERTIFICATE OF CALIBRATION

DIGIQUARTZ MODEL: 765-3K

SERIAL NUMBER(S): 105210

The Paroscientific Digiquartz Model (s) identified above has been calibrated and tested with one or more of the following primary pressure standards. All have traceability to the National Institute of Standards and Technology.

### Bell and Howell Primary Pressure Standard

Pneumatic Absolute or Gauge Dead Weight Tester Part Number: 6-201-0001, S/N 4034 and S/N 1014

- |                                     |  |                          |  |
|-------------------------------------|--|--------------------------|--|
| <input type="checkbox"/>            | Piston/Cylinder: 6-001-0002, P2-919/C2-1523,<br>Weight Set 1: 6-002-0002<br>Range: 1.5 to 50 psi [10 to 345 kPa]<br>Accuracy: 0.010 percent of reading | <input type="checkbox"/> | Piston/Cylinder: 6-001-0001, P1-949/C1-922, Weight Set<br>2: 6-002-0002<br>Range: 0.3 to 5 psi [2 to 34 kPa]<br>Accuracy: 0.015 percent of reading |
| <input checked="" type="checkbox"/> | Piston/Cylinder: 6-001-0002, P2-652/C2-1378,<br>Weight Set 2: 6-002-0002<br>Range: 1.5 to 50 psi [10 to 345 kPa]<br>Accuracy: 0.010 percent of reading |                          |  |

### DH Primary Pressure Standard

Pneumatic Absolute or Gauge Dead Weight Tester Part Number: PG7601 S/N 161

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Piston/Cylinder: S/N 305, Mass Set: S/N 2052<br>Range: 0.7 to 50 psi [5 to 345 kPa] absolute mode, 0.29 to 50 psi [2 to 345 kPa] gauge mode<br>Accuracy: 0.002 percent of reading |
|--------------------------|---|

### DH Primary Pressure Standard

Pneumatic Gauge Dead Weight Tester, Model 5203, S/N 5557

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Piston/Cylinder: S/N 4845, Mass Sets: S/N 2032, S/N 3293<br>Range: 20 to 1,600 psi [0.14 to 11 MPa]<br>Accuracy: 0.005 percent of reading |
|--------------------------|---|

### DH Primary Pressure Standard

Oil Operated Gauge Dead Weight Tester, Model 5306, S/N 3505

- |                                     |  |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Piston/Cylinder: S/N 3375, Mass Set: S/N 2032<br>Range: 40 to 20,000 psi [0.3 to 138 MPa]<br>Accuracy: 0.01 percent of reading above 200 psi [1.4 MPa]<br>or 0.02 psi [0.14 kPa] at lower pressure |
| <input type="checkbox"/>            | Piston/Cylinder: S/N 3511, Mass Set: S/N 2032<br>Range: 145 to 72,500 psi [1 to 500 MPa]<br>Accuracy: 0.02 percent of reading above 725 psi [5 MPa]<br>or 0.145 psi [1 kPa] at lower pressure      |

Tested By: 

DATE: 6/26/12



Digiquartz® Pressure Instrumentation

Document No. 8145-001, Rev. P 9/22/10

**Paroscientific, Inc.**  
**Pressure Instrument Configuration**

SN: 105210 Part Number: 1100-019-0 Model: 765-3K Port: Oil Filled  
 Calibration Date: 26-Jun-12 Report No: 14293 Technician: RM  
 Pressure Range: 0 to 3000 psia Temperature Range: 0 to 40 deg C

---

Customer: Mosaic Potash Hersey Report Date: 26-Jun-12  
 Address : 1395 135th Avenue Sales Order: 30096  
 Hersey, MI 49639 USA S/R Number : 10251

Configuration		Calibration Coefficients	
BL: 0	PT: N	U0: 5.813680	$\mu\text{sec}$
BR: 9600	QD: -	Y1: -3958.154	deg C / $\mu\text{sec}$
DD: -	QO: -	Y2: -13865.89	deg C / $\mu\text{sec}^2$
DL: 0	SL: -	Y3: -138805.8	deg C / $\mu\text{sec}^3$
DM: 0	SN: 105210	C1: -14414.57	psi
DO: -	ST: -	C2: -99.30154	psi / $\mu\text{sec}$
DP: 6	SU: 0	C3: 48299.55	psi / $\mu\text{sec}^2$
ID: 07	TI: 4670	D1: 0.0446906	
IM: -	TR: 952	D2: 0.0000000	
LL: -	TU: 0	T1: 30.00206	$\mu\text{sec}$
LH: -	UF: 1.000000	T2: 0.820646	$\mu\text{sec} / \mu\text{sec}$
MC: Y	UL: -	T3: 54.13041	$\mu\text{sec} / \mu\text{sec}^2$
MD: 1	UM: USER	T4: 71.54495	$\mu\text{sec} / \mu\text{sec}^3$
MN: 765-3K	UN: 1	T5: 2095.804	$\mu\text{sec} / \mu\text{sec}^4$
OP: -	US: 0	TC: 0.6781528	
PF: 3000.000	VR: P1.06	PA: -0.3538370	
PI: 4670	ZI: 0	PM: 0.9999510	
PL: 3600.000	ZS: 0		
PO: 0	ZL: 0		
PR: 238	ZV: .0000000		
PS: 0			
AL: .0000000			
AU: 3000.000			
GD: 0			
GT: 0			
LW: 0			
PC: .9999510			
PX: 5			
RS: 1			
RU: -			

Paroscientific, Inc.  
 4500 148th Ave NE Redmond, WA 98052  
 Phone: (425) 883-8700 Fax: (425) 867-5407  
 Web: <http://www.paroscientific.com>  
 Email: [support@paroscientific.com](mailto:support@paroscientific.com)

Prepared by



**Technology**



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639  
www.mosaicco.com

Tel 231-832-8800  
Fax 231-832-3349

September 25<sup>th</sup>, 2012

RECEIVED

OCT 01 2012

Lisa Perenchio, Chief  
Underground Injection Control Branch  
United States Environmental Protection Agency  
77 W. Jackson Blvd, WU-16J  
Chicago, IL 60604-3590

UIC BRANCH  
EPA, REGION 5

RE: M-474 / MI-133-3G-A002  
Part I MIT on Well KCL 1061

The Part 1 Mechanical Integrity Test was passed for Well 1061 on September 25<sup>th</sup>, 2012. The EPA did not witness the test per instructions from Jeff McDonald of USEPA. Ray Vugrinovich of the Michigan Department of Environmental Quality was present to witness the test. The DEQ Annular Pressure Test form completed by Mr. Vugrinovich is enclosed. The USEPA Standard Annular Pressure Test form for an un-witnessed test is enclosed, along with the calibration certification for the pressure gauge that was used.

If you need additional information, please contact me at 231-832-8824 or [douglas.patulski@mosaicco.com](mailto:douglas.patulski@mosaicco.com).

Sincerely,

Douglas M. Patulski  
Minefield Superintendent  
Mosaic Potash Hersey

Cc: Raymond Vugrinovich, Michigan Department of Environmental Quality

## UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

## STANDARD ANNULAR PRESSURE TEST

Operator MOAIC POTASH HERSEYState Permit No. M 474Address 1395 135TH AVEUSEPA Permit No. MI-133-36-A002HERSEY, MI 49639Date of Test 9/25/2012Well Name MOAIC 1061Well Type IIILOCATION INFORMATION NW Quarter of the SW Quarter of the NW QuarterSection 26; Range 09 W; Township 17 N; County OSCEOLA;Company Representative BILL HECKS; Field Inspector RAY VUERINGH (MDEQ)Type of Pressure Gauge DIETAL inch face; 0-3000 psi full scale; 0.0000 psi increments;New Gauge? Yes ~ No ~ If no, date of calibration 6/26/2012Calibration certification submitted? Yes No ~

## TEST RESULTS

5-year or annual test on time? Yes ~ NoAfter rework? Yes ~ NoNewly permitted well? Yes ~ No

## Pressure (in psig)

Time	Annulus	Tubing
<u>10:55</u>	<u>1123.6189</u>	<u>NONE</u>
<u>11:00</u>	<u>1119.9221</u>	
<u>11:05</u>	<u>1116.5323</u>	
<u>11:10</u>	<u>1114.1445</u>	
<u>11:15</u>	<u>1112.1290</u>	
<u>11:20</u>	<u>1110.4460</u>	
<u>11:25</u>	<u>1108.9846</u>	

Casing size 7" 23 # @ 7643'Tubing size NONEPacker type BRIDGE PLUGPacker set @ 6093'Fluid return (gal.) N/A

Comments:

Test Pressures: Max. Allowable Pressure Change: Initial test pressure x .03 33.7086 psiHalf Hour Pressure change 14.6343 psiTest Passed Test Failed ~

If failed test, well must shut in, no injection can occur, and USEPA must be contacted within 24 hours.

Corrective action needs to occur, the well retested, and written authorization received before injection can recommence.

Bill Hecks  
Signature of Company Representative9/25/2012  
Date

## UNWITNESSED MECHANICAL INTEGRITY TEST FORM

## ANNULAR PRESSURE TEST

By authority of Part 615 or Part 625 of  
Act 451 PA 1994, as amended.  
Non-submission and/or falsification of this information  
may result in fines and/or imprisonment.

By authority of Part 615 or Part 625 of Act 451 PA 1994, as amended. Non-submission and/or falsification of this information may result in fines and/or imprisonment.		Permit Number <b>M474 MI-133-3G-A002</b>	
		Well name & No. <b>Kalium Hersey No. 1061</b>	
		Surface location <b>NW 1/4 of SW 1/4 of NW 1/4, Section 26 T 17N R 09W</b>	
Name and address of permittee <b>Mosaic Potash Hersey LLC</b> <b>1395 135th Avenue</b> <b>Hersey, MI 49639</b>		Township <b>Hersey</b>	
		County <b>Osceola</b>	
		Well type Part 615 <input type="checkbox"/> Secondary recovery <input type="checkbox"/> Brine disposal Part 625 <input type="checkbox"/> Waste disposal <input checked="" type="checkbox"/> Solution mining	
Date of test <b>9/25/2012</b>		Casing <b>7" 23# @ 7643 feet</b>	
		Tubing <b>NONE IN HOLE</b>	
Type of gauge <b>PAROSCIENTIFIC MODEL 765-3K</b> <b>S/N 105210</b>		Packer type/model <b>BRIDGE PLUG</b>	
inch face <b>DIGITAL</b> psi range <b>0-3000</b>		Packer depth <b>6094'</b>	
New gauge <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No if no, enter date of test calibration <b>6/26/2012</b>		Type of non-corrosive liquid in the annulus	
Average rate during injection		Maximum allowed injection pressure	

## TEST DATA

[illegible]

Comments WELL WAS TAKEN OFF LINE 9/21/2012. OBSERVED CHANGE: 14.6343 PSIG;  
3% CHANGE: 33.7086 PSIG; 5% CHANGE: 56.1089 PSIG.  
WELL DEMONSTRATES INTERNAL MECHANICAL INTEGRITY.

Certification if witnessed by DEQ representative:

Signature of DEQ employee

Date 9/25/2012

Certification if not witnessed by DEQ representative: "I state that I am authorized by said owner. This report was prepared under my supervision and direction. The facts stated herein are true, accurate and complete to the best of my knowledge."

Signature

Date 9/25/2012

MAIL TO: OFFICE OF GEOLOGICAL SURVEY  
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY  
PO BOX 30256  
LANSING MI 48909-7756

## CERTIFICATE OF CONFORMANCE

CUSTOMER:

MOSAIC POTASH HERSEY

PURCHASE ORDER:

CHARGE

DIGIQUARTZ MODEL:

765-3K

PART NUMBER:

1100-019-0

SERIAL NUMBER(S):

105210

*PAROSCIENTIFIC INCORPORATED certifies that the part(s) identified above complies with the requirements of the above order and has been manufactured in accordance with engineering drawings, material and process specifications, testing procedures, and applicable specification drawing of Paroscientific Incorporated. The Digiquartz model(s) identified has been calibrated and tested over the specified pressure and temperature range and meets the requirements of the applicable specification drawing. Primary pressure, temperature standards and transfer standards used at Paroscientific Incorporated for calibration and testing have traceability to the National Institute of Standards and Technology and are regularly checked and calibrated according to Paroscientific QA Procedure Q8521, Inspection Test and Measurement Equipment, in accordance with the requirements of ISO 9001:2008.*



AUTHORIZED SIGNATURE

6/26/12

DATE

Warren Schuchman, Quality Assurance Manager



**Technology**

Precision Pressure Instrumentation

Document no. T8148, Rev "AU", 11 Oct 2011 page 1 of 2



## CERTIFICATION OF TRACEABILITY TO NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

*Primary pressure and temperature standards used in the calibration and testing of Paroscientific Digiquartz Models have traceability to the National Institute of Standards and Technology through the following documentation.*

### Bell and Howell Primary Pressure Standard:

Bell and Howell, Model 6-201-0001, Piston/Cylinder P2-919/C2-1523 via DH Calibration Report No. 15441 and 16653 traceable to NIST. Weight Set 1, P/N 6-002-0002, via DH Calibration Report No. 14481, 16654 and 1284473284 traceable to NIST. Weight Set 2, P/N 6-002-0002, via DH Calibration Report No. 14576, 16603, 31227, 39628, 68390 and 1317389777 traceable to NIST. Piston/Cylinder P2-652/C2-1378 via DH Instruments Calibration Report No. 14575, 16602, 31226, 39627, 68389 and 1317739617 traceable to NIST. Piston/Cylinder P1-231/C1-384 via DH Instruments Calibration Report No. 13170 and 1284475131 traceable to NIST. Piston/Cylinder P/N 6-201, No. P1-949/C1-922, via DH Instruments Calibration Report 17176 and 17445, traceable to NIST.

### DH Primary Pressure Standard, Oil Operated Gauge:

DH Instruments, Model 5306, Piston/Cylinder S/N 3375, via DH Calibration Certificate Report No. 8398, 22146, 32354, 45306, 66563 and 1305698573 traceable to NIST. Piston/Cylinder 3511 via DH Calibration Report No. 8399, 22147, 32353, 45307, 66562 and 1305625084 traceable to NIST. Mass Set S/N 2032 via DH Calibration Report No. 24809, 24826, 45305, 45308, 1305538925 and 1305530461 traceable to NIST.

### DH Primary Pressure Standard, Pneumatic Operated Gauge:

DH Instruments, Model 5203, Piston/Cylinder S/N 4845, via DH Calibration Certificate No. 8541, 27161, 38275 and 1300177141 traceable to NIST. Mass Set S/N 2032/3293 via DH Calibration Certificate Nos. 4630, 24809, 8540, 32142, 45305 and 1300200369 traceable to NIST.

### DH Primary Pressure Standard, Pneumatic Operated Gauge:

DH instruments, Model PG7601 via DH Instruments Calibration No. 32162, 41492 and 69127 traceable to NIST. Piston/Cylinder S/N 305 via DH Instruments Calibration No. 20281, 32161, 41490 and 69125 traceable to NIST. DH Instruments 35 kg Mass Set No. 2052 and Bell No. 261A via DH Instruments Calibration Report No. 20282, 32163, 32164, 41491, 41493, 69126 and 69124 traceable to NIST.

### Hygroclip S3 MET4/4A Part number 1560-XXX and 1561-XXX:

Humidity and Temperature calibrations are traceable to NIST through Rotronic Instrument Corporation; 160 E. Main Street, Huntington, NY 11743.

### Hygroclip HC2-S3 MET4/4A Part number 1563-XXX and 1564-XXX Swiss Calibration Service (SCS)

Humidity and Temperature calibrations are traceable to SCS through Rotronic AG Grindelstrasse 6 8303 Bassersdorf Phone: 044-838-1111 E-mail: info@rotronic.ch



## CERTIFICATE OF CALIBRATION

DIGIQUARTZ MODEL: 765-3K

SERIAL NUMBER(S): 105210

The Paroscientific Digiquartz Model (s) identified above has been calibrated and tested with one or more of the following primary pressure standards. All have traceability to the National Institute of Standards and Technology.

### Bell and Howell Primary Pressure Standard

Pneumatic Absolute or Gauge Dead Weight Tester Part Number: 6-201-0001, S/N 4034 and S/N 1014

- |                                     |  |                          |  |
|-------------------------------------|--|--------------------------|--|
| <input type="checkbox"/>            | Piston/Cylinder: 6-001-0002, P2-919/C2-1523,<br>Weight Set 1: 6-002-0002<br>Range: 1.5 to 50 psi [10 to 345 kPa]<br>Accuracy: 0.010 percent of reading | <input type="checkbox"/> | Piston/Cylinder: 6-001-0001, P1-949/C1-922, Weight Set<br>2: 6-002-0002<br>Range: 0.3 to 5 psi [2 to 34 kPa]<br>Accuracy: 0.015 percent of reading |
| <input checked="" type="checkbox"/> | Piston/Cylinder: 8-001-0002, P2-652/C2-1378,<br>Weight Set 2: 6-002-0002<br>Range: 1.5 to 50 psi [10 to 345 kPa]<br>Accuracy: 0.010 percent of reading |                          |  |

### DH Primary Pressure Standard

Pneumatic Absolute or Gauge Dead Weight Tester Part Number: PG7601 S/N 161

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Piston/Cylinder: S/N 305, Mass Set: S/N 2052<br>Range: 0.7 to 50 psi [5 to 345 kPa] absolute mode, 0.29 to 50 psi [2 to 345 kPa] gauge mode<br>Accuracy: 0.002 percent of reading |
|--------------------------|---|

### DH Primary Pressure Standard

Pneumatic Gauge Dead Weight Tester, Model 5203, S/N 5557

- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | Piston/Cylinder: S/N 4845, Mass Sets: S/N 2032, S/N 3293<br>Range: 20 to 1,600 psi [0.14 to 11 MPa]<br>Accuracy: 0.005 percent of reading |
|--------------------------|---|

### DH Primary Pressure Standard

Oil Operated Gauge Dead Weight Tester, Model 5306, S/N 3505

- |                                     |  |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Piston/Cylinder: S/N 3375, Mass Set: S/N 2032<br>Range: 40 to 20,000 psi [0.3 to 138 MPa]<br>Accuracy: 0.01 percent of reading above 200 psi [1.4 MPa]<br>or 0.02 psi [0.14 kPa] at lower pressure |
| <input type="checkbox"/>            | Piston/Cylinder: S/N 3511, Mass Set: S/N 2032<br>Range: 145 to 72,500 psi [1 to 500 MPa]<br>Accuracy: 0.02 percent of reading above 725 psi [5 MPa]<br>or 0.145 psi [1 kPa] at lower pressure      |

Tested By: 

DATE: 6/26/12



**Paroscientific, Inc.**  
**Pressure Instrument Configuration**

SN: 105210 Part Number: 1100-019-0 Model: 765-3K Port: Oil Filled  
 Calibration Date: 26-Jun-12 Report No: 14293 Technician: RM  
 Pressure Range: 0 to 3000 psia Temperature Range: 0 to 40 deg C

---

Customer: Mosaic Potash Hersey Report Date: 26-Jun-12  
 Address : 1395 135th Avenue Sales Order: 30096  
 Hersey, MI 49639 USA S/R Number : 10251

Configuration		Calibration Coefficients	
BL: 0	PT: N	U0: 5.813680	µsec
BR: 9600	QD: -	Y1: -3958.154	deg C / µsec
DD: -	QO: -	Y2: -13865.89	deg C / µsec <sup>2</sup>
DL: 0	SL: -	Y3: -138805.8	deg C / µsec <sup>3</sup>
DM: 0	SN: 105210	C1: -14414.57	psi
DO: -	ST: -	C2: -99.30154	psi / µsec
DP: 6	SU: 0	C3: 48299.55	psi / µsec <sup>2</sup>
ID: 07	TI: 4670	D1: 0.0446906	
IM: -	TR: 952	D2: 0.0000000	
LL: -	TU: 0	T1: 30.00206	µsec
LH: -	UF: 1.0000000	T2: 0.820646	µsec / µsec
MC: Y	UL: -	T3: 54.13041	µsec / µsec <sup>2</sup>
MD: 1	UM: USER	T4: 71.54495	µsec / µsec <sup>3</sup>
MN: 765-3K	UN: 1	T5: 2095.804	µsec / µsec <sup>4</sup>
OP: -	US: 0	TC: 0.6781528	
PF: 3000.000	VR: P1.06	PA: -0.3538370	
PI: 4670	ZI: 0	PM: 0.9999510	
PL: 3600.000	ZS: 0		
PO: 0	ZL: 0		
PR: 238	ZV: .0000000		
PS: 0			
AL: .00000000			
AU: 3000.000			
GD: 0			
GT: 0			
LW: 0			
PC: .9999510			
PX: 5			
RS: 1			
RU: -			

Paroscientific, Inc.  
 4500 148th Ave. N.E. Redmond, WA 98052  
 Phone: (425) 883-8700 Fax: (425) 867-5407  
 Web: <http://www.paroscientific.com>  
 Email: [support@paroscientific.com](mailto:support@paroscientific.com)

Prepared by



**Technology**



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

December 10, 2012

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EPA, REGION 5

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for November 2012

During the month of November, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 30 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 30 days this month.
- Cavity KCI 1060 was in operation for 30 days this month.
- Cavity KCI 2030 was in operation for 30 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 30 days this month.
- Cavity KCI 2062 was not in operation for this month.

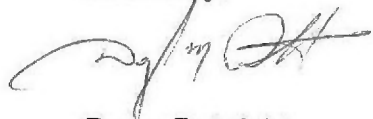
Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

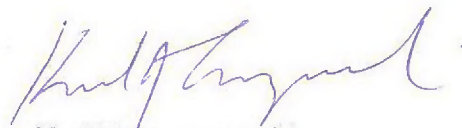
1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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CAVITY 1010

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in
15-Nov-12	shut in	shut in	shut in
16-Nov-12	shut in	shut in	shut in
17-Nov-12	shut in	shut in	shut in
18-Nov-12	shut in	shut in	shut in
19-Nov-12	shut in	shut in	shut in
20-Nov-12	shut in	shut in	shut in
21-Nov-12	shut in	shut in	shut in
22-Nov-12	shut in	shut in	shut in
23-Nov-12	shut in	shut in	shut in
24-Nov-12	shut in	shut in	shut in
25-Nov-12	shut in	shut in	shut in
26-Nov-12	shut in	shut in	shut in
27-Nov-12	shut in	shut in	shut in
28-Nov-12	shut in	shut in	shut in
29-Nov-12	shut in	shut in	shut in
30-Nov-12	shut in	shut in	shut in

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CAVITY 1020

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	1027	149	170
2-Nov-12	1008	156	176
3-Nov-12	1010	164	194
4-Nov-12	1022	149	181
5-Nov-12	1056	159	188
6-Nov-12	1031	160	174
7-Nov-12	1023	162	181
8-Nov-12	1026	164	181
9-Nov-12	1044	154	181
10-Nov-12	1032	167	175
11-Nov-12	1027	151	158
12-Nov-12	999	143	172
13-Nov-12	962	137	187
14-Nov-12	984	147	184
15-Nov-12	969	152	187
16-Nov-12	961	156	193
17-Nov-12	958	162	195
18-Nov-12	964	150	190
19-Nov-12	1049	182	192
20-Nov-12	989	170	220
21-Nov-12	957	157	218
22-Nov-12	946	184	229
23-Nov-12	955	207	251
24-Nov-12	948	203	237
25-Nov-12	944	205	236
26-Nov-12	947	205	235
27-Nov-12	947	211	239
28-Nov-12	958	173	234
29-Nov-12	961	208	259
30-Nov-12	1057	307	312

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Cavity 1020

Nov-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
992	173	204

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Nov-12	✓ 1057	307

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
25-Nov-12	944	205

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
30-Nov-12	✓ 307	1057

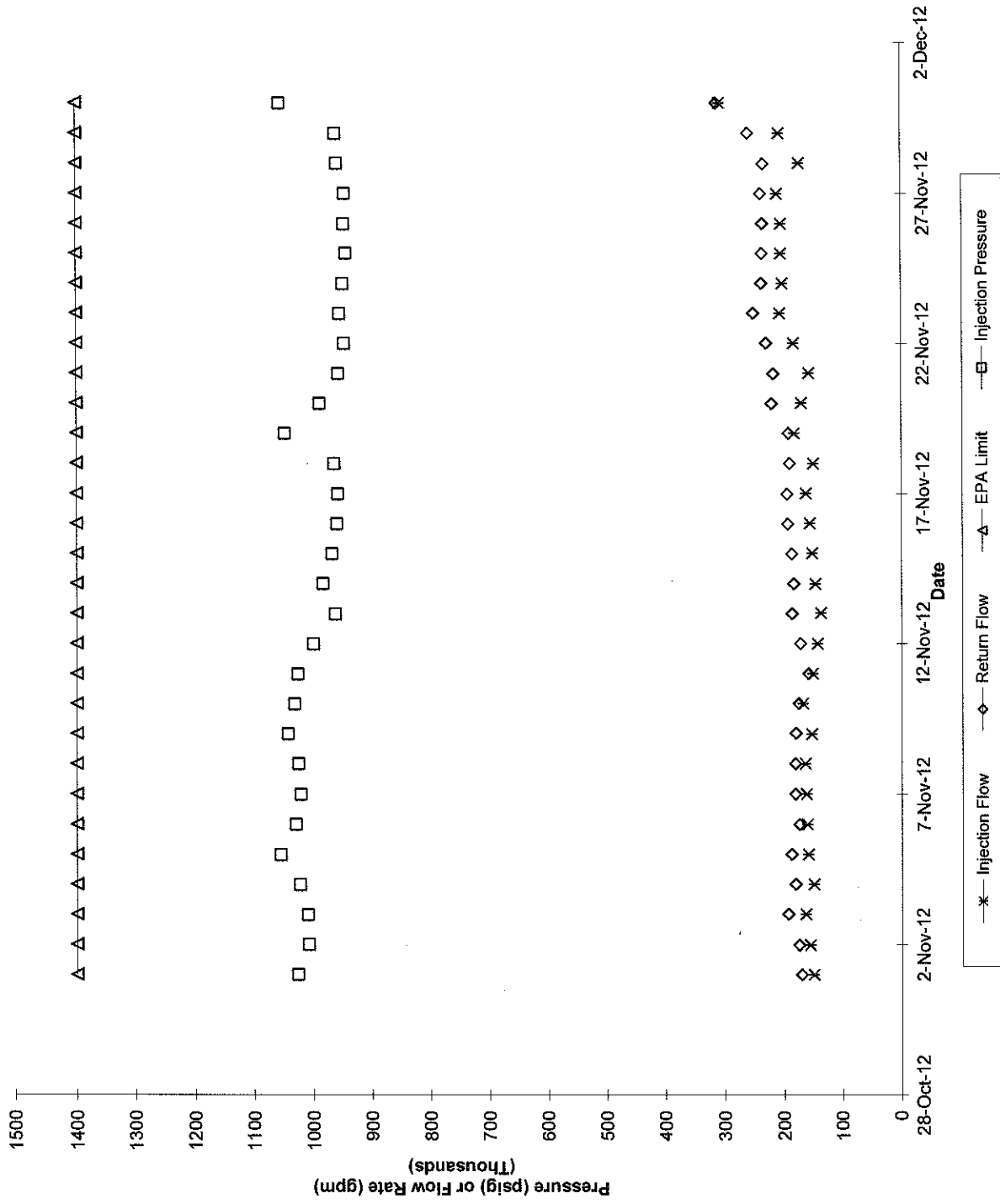
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



CAVITY 1040

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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in
15-Nov-12	shut in	shut in	shut in
16-Nov-12	shut in	shut in	shut in
17-Nov-12	shut in	shut in	shut in
18-Nov-12	shut in	shut in	shut in
19-Nov-12	shut in	shut in	shut in
20-Nov-12	shut in	shut in	shut in
21-Nov-12	shut in	shut in	shut in
22-Nov-12	shut in	shut in	shut in
23-Nov-12	shut in	shut in	shut in
24-Nov-12	shut in	shut in	shut in
25-Nov-12	shut in	shut in	shut in
26-Nov-12	shut in	shut in	shut in
27-Nov-12	shut in	shut in	shut in
28-Nov-12	shut in	shut in	shut in
29-Nov-12	shut in	shut in	shut in
30-Nov-12	shut in	shut in	shut in

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CAVITY 1050

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	1133	147	147
2-Nov-12	1133	119	119
3-Nov-12	1173	140	140
4-Nov-12	1190	133	133
5-Nov-12	1125	139	139
6-Nov-12	1100	144	144
7-Nov-12	1173	133	133
8-Nov-12	1185	127	127
9-Nov-12	1163	161	161
10-Nov-12	1148	146	146
11-Nov-12	1163	146	146
12-Nov-12	1160	144	144
13-Nov-12	1155	127	127
14-Nov-12	1130	130	130
15-Nov-12	1113	140	140
16-Nov-12	1165	135	135
17-Nov-12	1140	146	146
18-Nov-12	1185	120	120
19-Nov-12	1170	152	152
20-Nov-12	1150	165	165
21-Nov-12	1143	137	137
22-Nov-12	1133	132	132
23-Nov-12	1100	124	124
24-Nov-12	1123	134	134
25-Nov-12	1130	157	157
26-Nov-12	1165	142	142
27-Nov-12	1175	110	110
28-Nov-12	1140	147	147
29-Nov-12	1138	135	135
30-Nov-12	1175	113	113

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Cavity 1050

Nov-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1149	138	138

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
4-Nov-12	1190	133

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Nov-12	1100	144

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
20-Nov-12	165	1150

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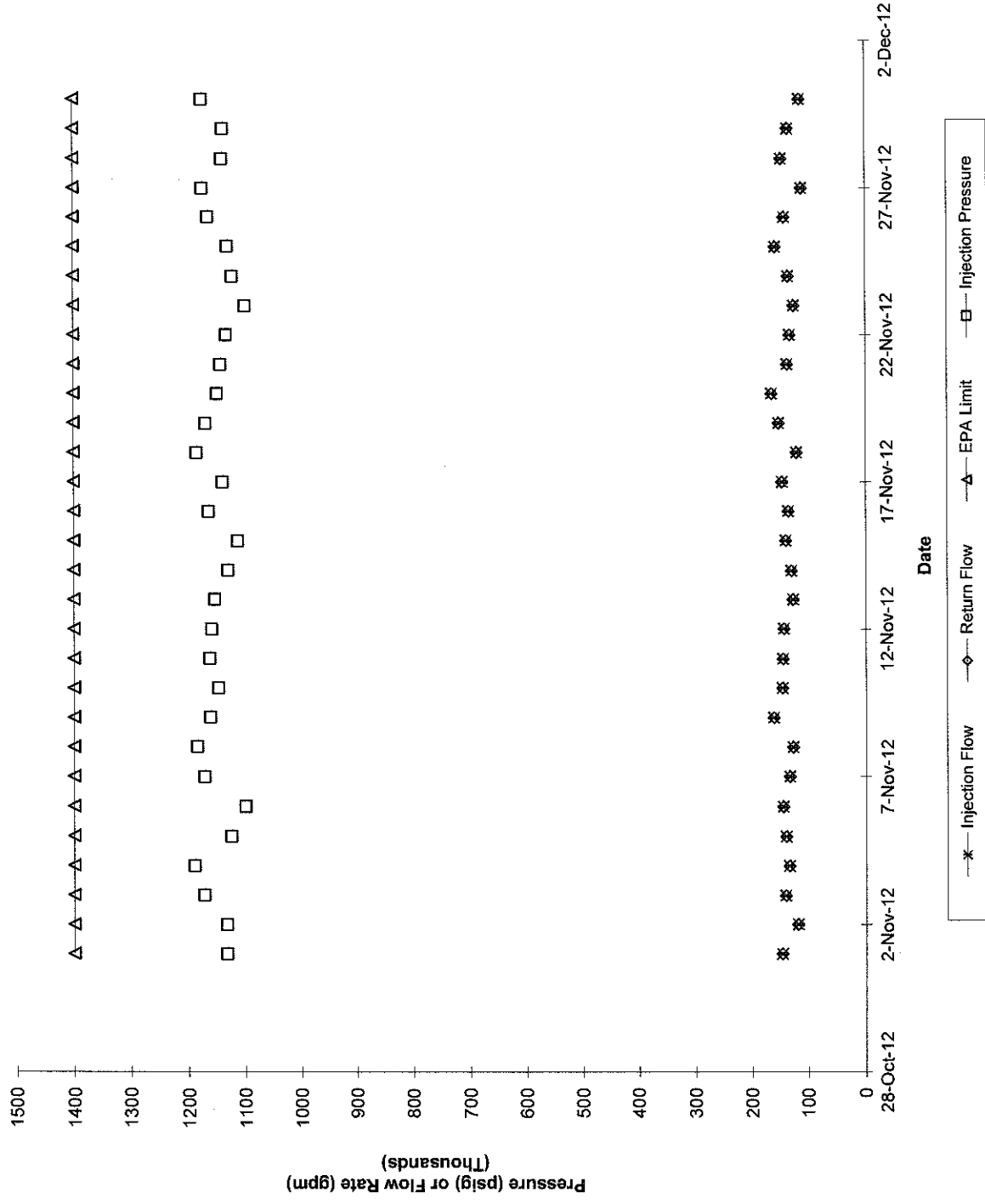
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Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



CAVITY 1060

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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	1027	222	241
2-Nov-12	1008	222	245
3-Nov-12	1010	264	270
4-Nov-12	1022	257	257
5-Nov-12	1056	257	271
6-Nov-12	1031	257	261
7-Nov-12	1023	250	254
8-Nov-12	1026	257	258
9-Nov-12	1044	250	278
10-Nov-12	1032	257	269
11-Nov-12	1027	271	276
12-Nov-12	999	264	278
13-Nov-12	962	257	277
14-Nov-12	984	250	275
15-Nov-12	969	243	273
16-Nov-12	961	250	279
17-Nov-12	958	250	275
18-Nov-12	964	236	255
19-Nov-12	1049	194	234
20-Nov-12	989	215	237
21-Nov-12	957	222	232
22-Nov-12	946	215	233
23-Nov-12	955	201	225
24-Nov-12	948	194	214
25-Nov-12	944	201	212
26-Nov-12	947	194	208
27-Nov-12	947	194	209
28-Nov-12	958	167	197
29-Nov-12	961	188	196
30-Nov-12	0	0	132

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Cavity 1060

Nov-12  
Monthly Averages

Injection Pressure  
957

Injection Flow  
223

Return Flow  
244

Maximum Injection Pressure and corresponding Injection Flow

Date  
5-Nov-12

Injection Pressure  
1056

Injection Flow  
257

Minimum Injection Pressure and corresponding Injection Flow

Date  
30-Nov-12

Injection Pressure  
0

Injection Flow  
0

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
11-Nov-12

Injection Flow  
271

Injection Pressure  
1027

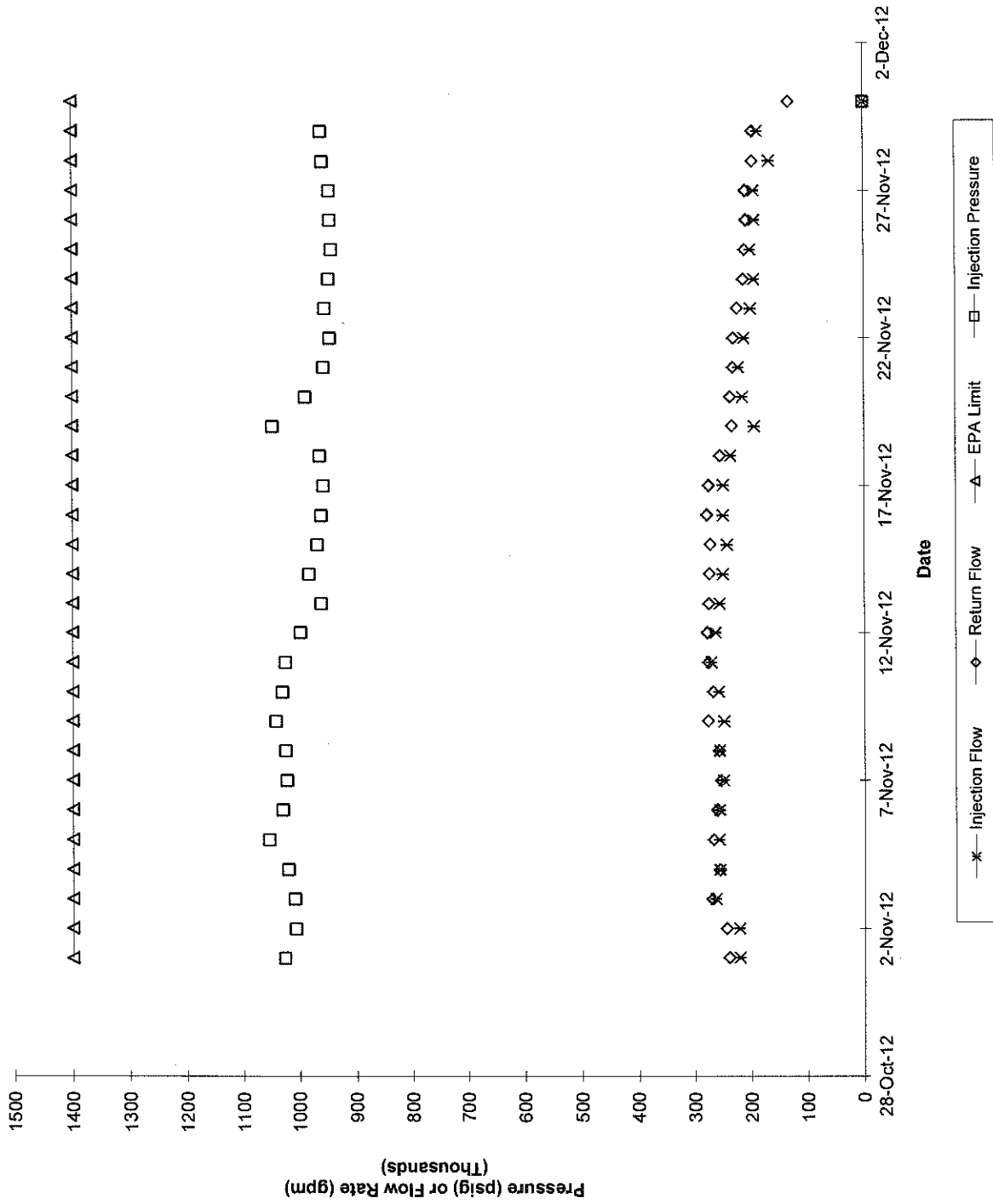
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# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



CAVITY 2030

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Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	1133	277	277
2-Nov-12	1133	265	265
3-Nov-12	1173	317	317
4-Nov-12	1190	307	307
5-Nov-12	1125	293	293
6-Nov-12	1100	289	289
7-Nov-12	1173	306	306
8-Nov-12	1185	299	299
9-Nov-12	1163	278	278
10-Nov-12	1148	290	290
11-Nov-12	1163	310	310
12-Nov-12	1160	298	298
13-Nov-12	1155	301	301
14-Nov-12	1130	291	291
15-Nov-12	1113	300	300
16-Nov-12	1165	314	314
17-Nov-12	1140	292	292
18-Nov-12	1185	294	294
19-Nov-12	1170	290	290
20-Nov-12	1150	294	294
21-Nov-12	1143	284	284
22-Nov-12	1133	296	296
23-Nov-12	1100	296	296
24-Nov-12	1123	289	289
25-Nov-12	1130	302	302
26-Nov-12	1165	299	299
27-Nov-12	1175	292	292
28-Nov-12	1140	288	288
29-Nov-12	1138	275	275
30-Nov-12	1175	271	271

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Cavity 2030

Nov-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1149	293	293

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
4-Nov-12	1190	307

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Nov-12	1100	289

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
3-Nov-12	317	1173

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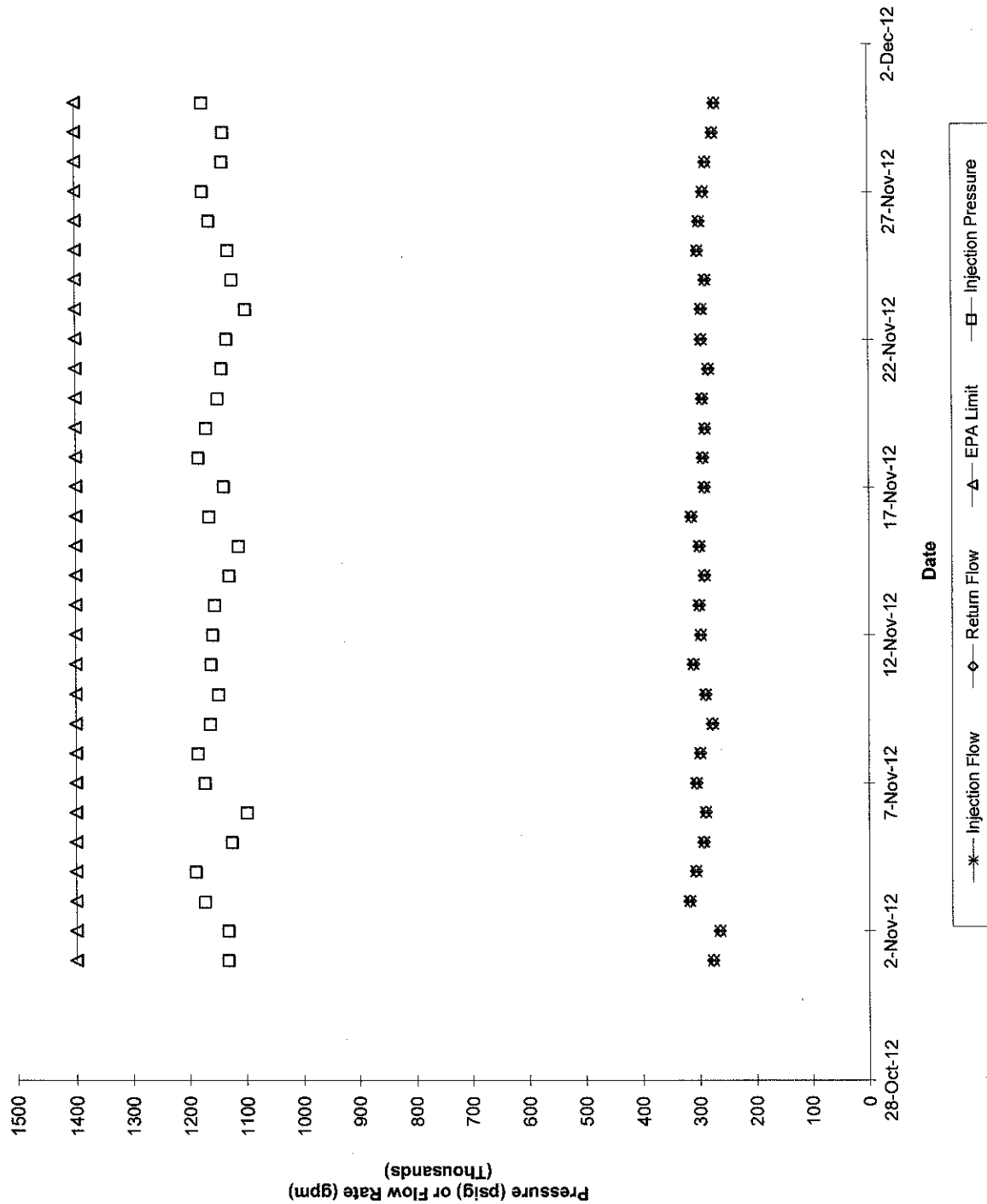
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



CAVITY 2040

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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in
15-Nov-12	shut in	shut in	shut in
16-Nov-12	shut in	shut in	shut in
17-Nov-12	shut in	shut in	shut in
18-Nov-12	shut in	shut in	shut in
19-Nov-12	shut in	shut in	shut in
20-Nov-12	shut in	shut in	shut in
21-Nov-12	shut in	shut in	shut in
22-Nov-12	shut in	shut in	shut in
23-Nov-12	shut in	shut in	shut in
24-Nov-12	shut in	shut in	shut in
25-Nov-12	shut in	shut in	shut in
26-Nov-12	shut in	shut in	shut in
27-Nov-12	shut in	shut in	shut in
28-Nov-12	shut in	shut in	shut in
29-Nov-12	shut in	shut in	shut in
30-Nov-12	shut in	shut in	shut in

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CAVITY 2061

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Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	1133	121	121
2-Nov-12	1137	118	118
3-Nov-12	1173	132	132
4-Nov-12	1190	130	130
5-Nov-12	1125	155	155
6-Nov-12	1100	149	149
7-Nov-12	1173	126	126
8-Nov-12	1185	132	132
9-Nov-12	1163	132	132
10-Nov-12	1148	116	116
11-Nov-12	1163	121	121
12-Nov-12	1160	121	121
13-Nov-12	1135	131	131
14-Nov-12	1130	134	134
15-Nov-12	1113	120	120
16-Nov-12	1165	124	124
17-Nov-12	1140	139	139
18-Nov-12	1185	131	131
19-Nov-12	1170	119	119
20-Nov-12	1150	122	122
21-Nov-12	1143	120	120
22-Nov-12	1133	132	132
23-Nov-12	1100	138	138
24-Nov-12	1123	128	128
25-Nov-12	1130	111	111
26-Nov-12	1165	119	119
27-Nov-12	1175	120	120
28-Nov-12	1140	99	99
29-Nov-12	1138	132	132
30-Nov-12	1175	91	91

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Cavity 2061

Nov-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1149	125	125

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
4-Nov-12	1190	130

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Nov-12	1100	149

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
5-Nov-12	155	1125

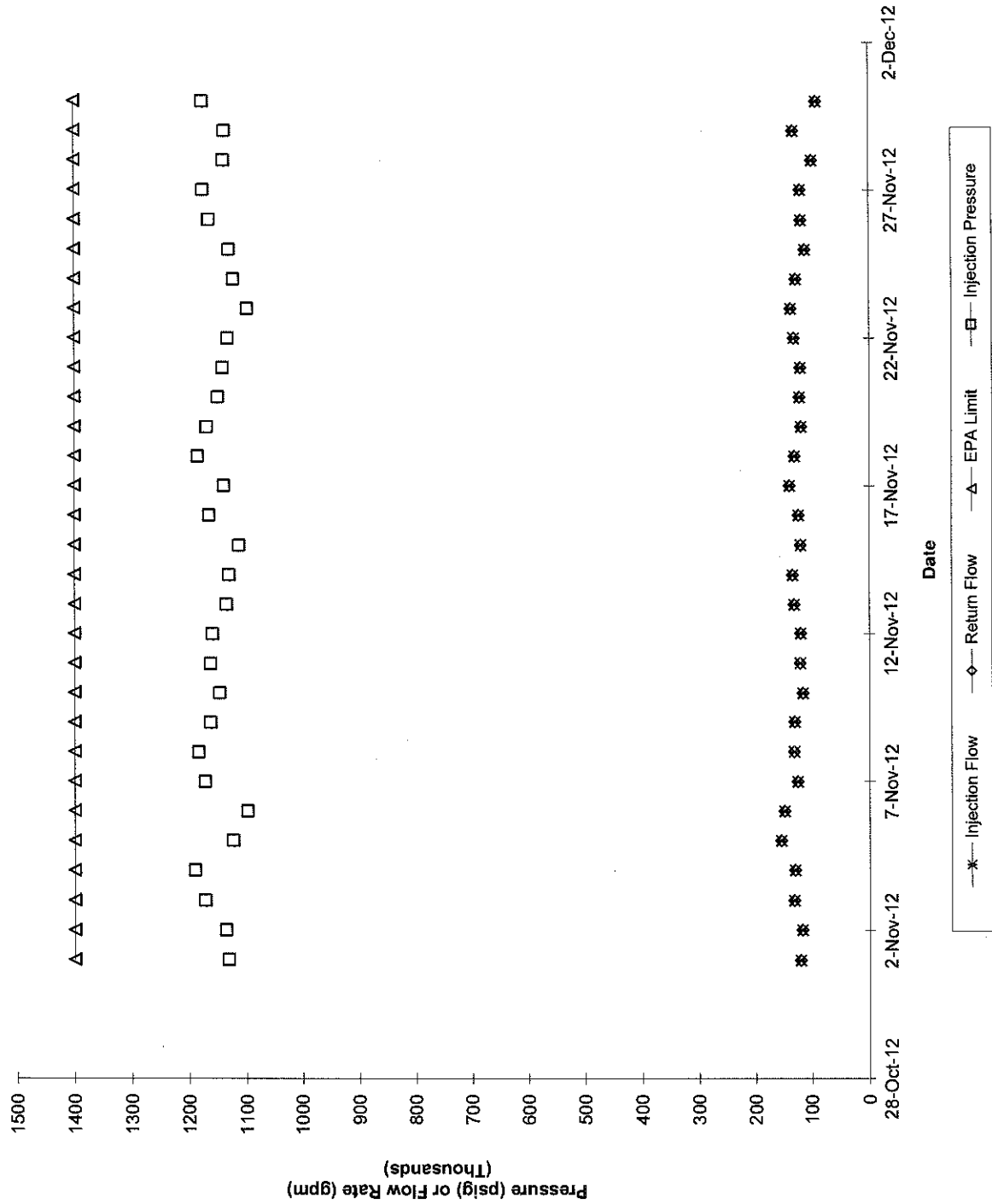
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Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



CAVITY 2062

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Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Nov-12	shut in	shut in	shut in
2-Nov-12	shut in	shut in	shut in
3-Nov-12	shut in	shut in	shut in
4-Nov-12	shut in	shut in	shut in
5-Nov-12	shut in	shut in	shut in
6-Nov-12	shut in	shut in	shut in
7-Nov-12	shut in	shut in	shut in
8-Nov-12	shut in	shut in	shut in
9-Nov-12	shut in	shut in	shut in
10-Nov-12	shut in	shut in	shut in
11-Nov-12	shut in	shut in	shut in
12-Nov-12	shut in	shut in	shut in
13-Nov-12	shut in	shut in	shut in
14-Nov-12	shut in	shut in	shut in
15-Nov-12	shut in	shut in	shut in
16-Nov-12	shut in	shut in	shut in
17-Nov-12	shut in	shut in	shut in
18-Nov-12	shut in	shut in	shut in
19-Nov-12	shut in	shut in	shut in
20-Nov-12	shut in	shut in	shut in
21-Nov-12	shut in	shut in	shut in
22-Nov-12	shut in	shut in	shut in
23-Nov-12	shut in	shut in	shut in
24-Nov-12	shut in	shut in	shut in
25-Nov-12	shut in	shut in	shut in
26-Nov-12	shut in	shut in	shut in
27-Nov-12	shut in	shut in	shut in
28-Nov-12	shut in	shut in	shut in
29-Nov-12	shut in	shut in	shut in
30-Nov-12	shut in	shut in	shut in

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Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

July 17, 2012

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UIC BRANCH  
EPA, REGION 5

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for June 2012

During the month of June, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 21 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 30 days this month.
- Cavity KCI 1060 was in operation for 8 days this month.
- Cavity KCI 2030 was in operation for 30 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 30 days this month.
- Cavity KCI 2062 was not in operation for this month.

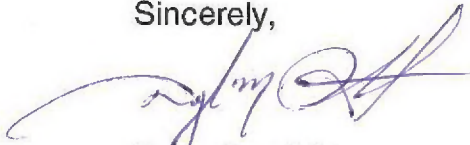
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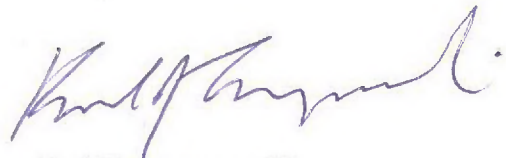
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I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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CAVITY 1010 ✓

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in

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CAVITY 1020 ✓

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	1157	250	286
2-Jun-12	1181	297	319
3-Jun-12	1181	292	320
4-Jun-12	1157	291	326
5-Jun-12	1150	319	350
6-Jun-12	1154	299	324
7-Jun-12	1138	341	310
8-Jun-12	1133	308	337
9-Jun-12	1113	291	339
10-Jun-12	1162	327	341
11-Jun-12	1161	323	347
12-Jun-12	1158	313	345
13-Jun-12	1151	301	333
14-Jun-12	1112	317	354
15-Jun-12	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in
24-Jun-12	1126	290	301
25-Jun-12	1120	306	318
26-Jun-12	1120	266	314
27-Jun-12	1080	307	318
28-Jun-12	1108	328	339
29-Jun-12	1123	337	368
30-Jun-12	1105	240	235

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Cavity 1020

Jun-12 ✓  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1138	302	325

✓  
Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
2-Jun-12	1181	297

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
27-Jun-12	1080	307

✓  
Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
7-Jun-12	341	1138

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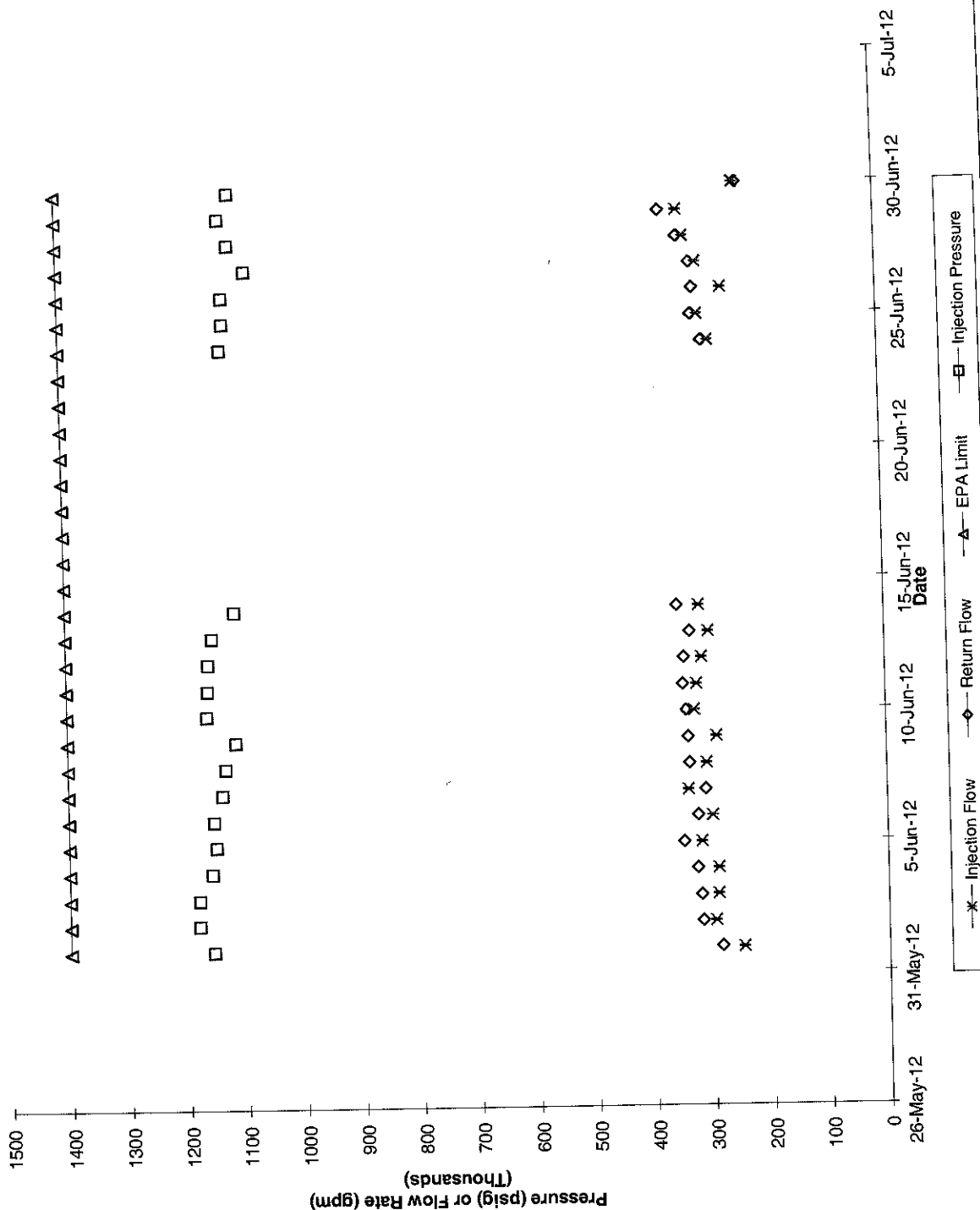
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



CAVITY 1040 ✓

Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in

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CAVITY 1050✓

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	1175	155	155
2-Jun-12	1180	154	154
3-Jun-12	1200	160	160
4-Jun-12	1167	149	149
5-Jun-12	1182	169	169
6-Jun-12	1183	149	149
7-Jun-12	1200	157	157
8-Jun-12	1175	174	174
9-Jun-12	1185	147	147
10-Jun-12	1144	144	144
11-Jun-12	1138	128	128
12-Jun-12	1200	163	163
13-Jun-12	1153	148	148
14-Jun-12	1158	162	162
15-Jun-12	1183	151	151
16-Jun-12	1163	137	137
17-Jun-12	1188	170	170
18-Jun-12	1165	148	148
19-Jun-12	1156	188	188
20-Jun-12	1175	143	143
21-Jun-12	1188	167	167
22-Jun-12	1160	156	156
23-Jun-12	1163	144	144
24-Jun-12	1183	159	159
25-Jun-12	1175	157	157
26-Jun-12	1175	151	151
27-Jun-12	1208	169	169
28-Jun-12	1170	156	156
29-Jun-12	1188	140	140
30-Jun-12	1200	127	127

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Cavity 1050

Jun-12  
Monthly Averages

Injection Pressure (psi)  
1176

Injection Flow (gpm)  
154

Return Flow (gpm)  
154

Maximum Injection Pressure and corresponding Injection Flow

Date  
27-Jun-12

Injection Pressure (psi)  
1208

Injection Flow (gpm)  
169

Minimum Injection Pressure and corresponding Injection Flow

Date  
11-Jun-12

Injection Pressure (psi)  
1138

Injection Flow (gpm)  
128

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
19-Jun-12

Injection Flow (gpm)  
188

Injection Pressure (psi)  
1156

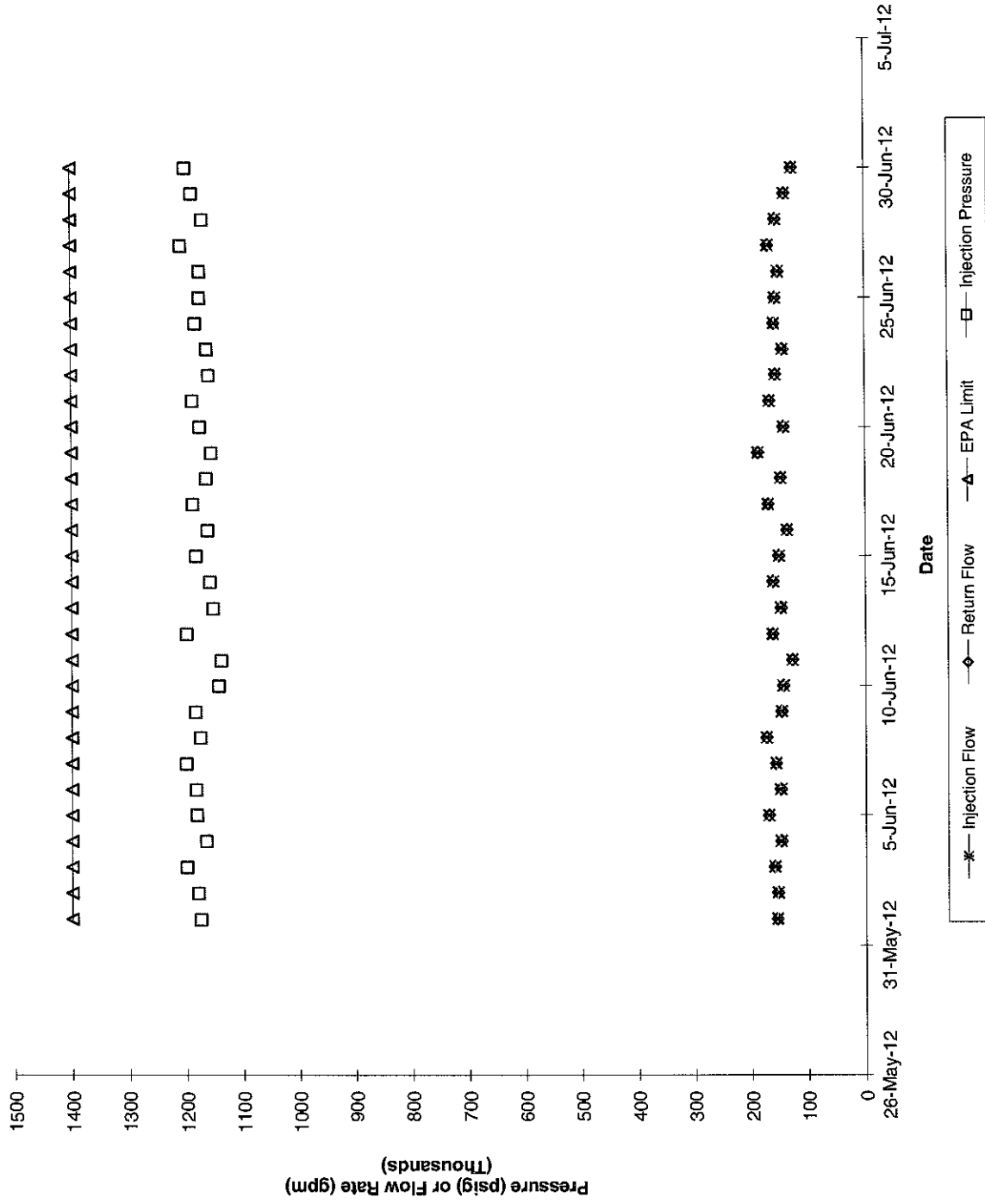
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# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



CAVITY 1060 ✓

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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in
16-Jun-12	1111	340	337
17-Jun-12	1129	340	343
18-Jun-12	1145	326	344
19-Jun-12	1125	313	290
20-Jun-12	1121	299	304
21-Jun-12	1106	306	318
22-Jun-12	1173	326	341
23-Jun-12	1076	125	135
24-Jun-12	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in

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Cavity 1060

Jun-12  
Monthly Averages

Injection Pressure  
1123

Injection Flow  
297

Return Flow  
302

Maximum Injection Pressure and corresponding Injection Flow

Date  
22-Jun-12

Injection Pressure  
1173

Injection Flow  
326

Minimum Injection Pressure and corresponding Injection Flow

Date  
23-Jun-12

Injection Pressure  
1076

Injection Flow  
125

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
16-Jun-12

Injection Flow  
340

Injection Pressure  
1111

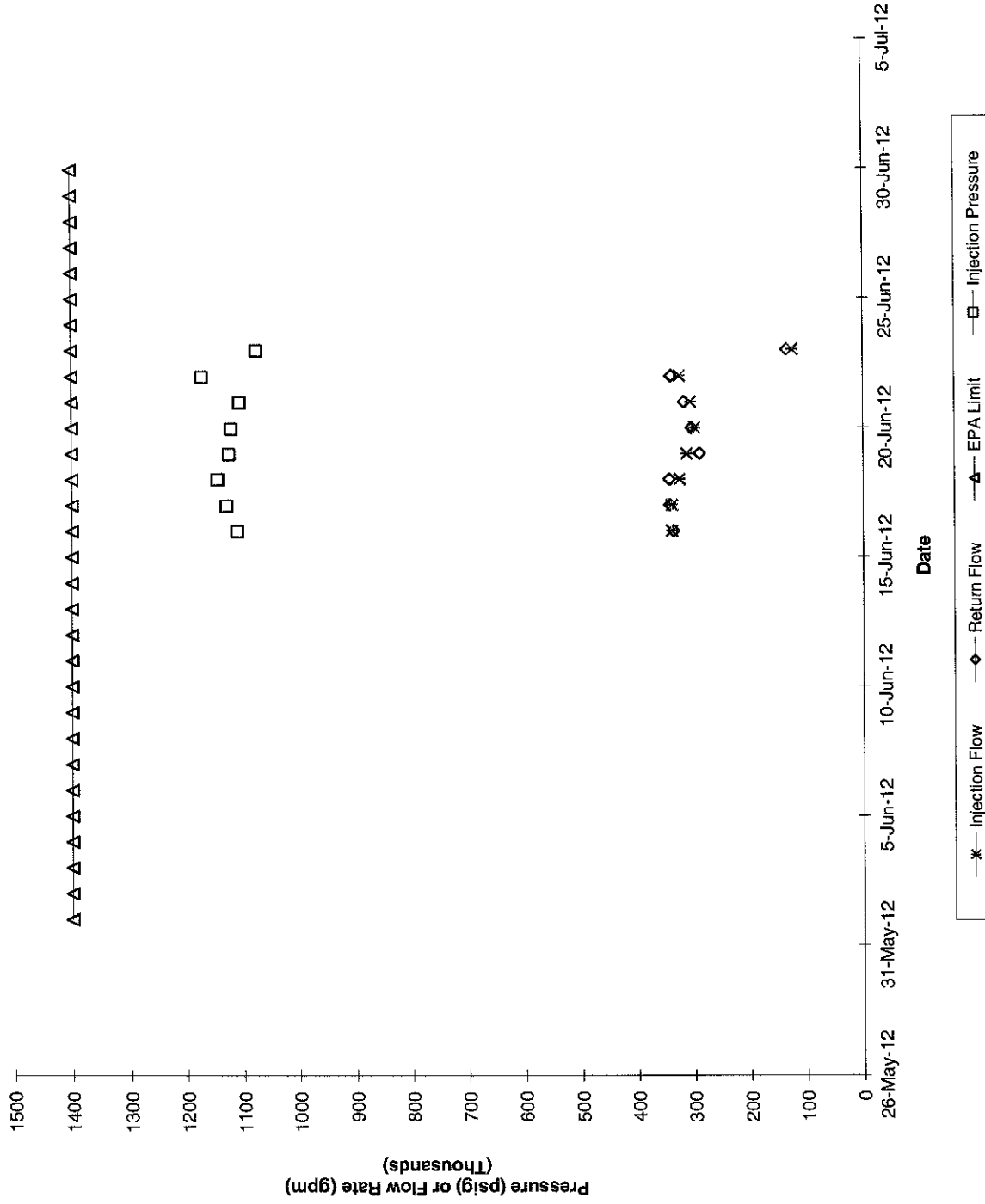
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# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



CAVITY 2030 ✓

Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	1183	195	195
2-Jun-12	1187	187	187
3-Jun-12	1200	192	192
4-Jun-12	1167	212	212
5-Jun-12	1182	215	215
6-Jun-12	1183	229	229
7-Jun-12	1200	234	234
8-Jun-12	1175	226	226
9-Jun-12	1185	245	245
10-Jun-12	1144	221	221
11-Jun-12	1138	219	219
12-Jun-12	1200	223	223
13-Jun-12	1153	181	181
14-Jun-12	1192	195	195
15-Jun-12	1183	174	174
16-Jun-12	1163	236	236
17-Jun-12	1188	234	234
18-Jun-12	1165	213	213
19-Jun-12	1142	168	168
20-Jun-12	1175	197	197
21-Jun-12	1188	243	243
22-Jun-12	1160	211	211
23-Jun-12	1163	176	176
24-Jun-12	1183	186	186
25-Jun-12	1167	204	204
26-Jun-12	1183	170	170
27-Jun-12	1213	165	165
28-Jun-12	1170	166	166
29-Jun-12	1188	231	231
30-Jun-12	1200	228	228

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Cavity 2030

Jun-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1177	206	206

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
27-Jun-12	1213	165

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
11-Jun-12	1138	219

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
9-Jun-12	245	1185

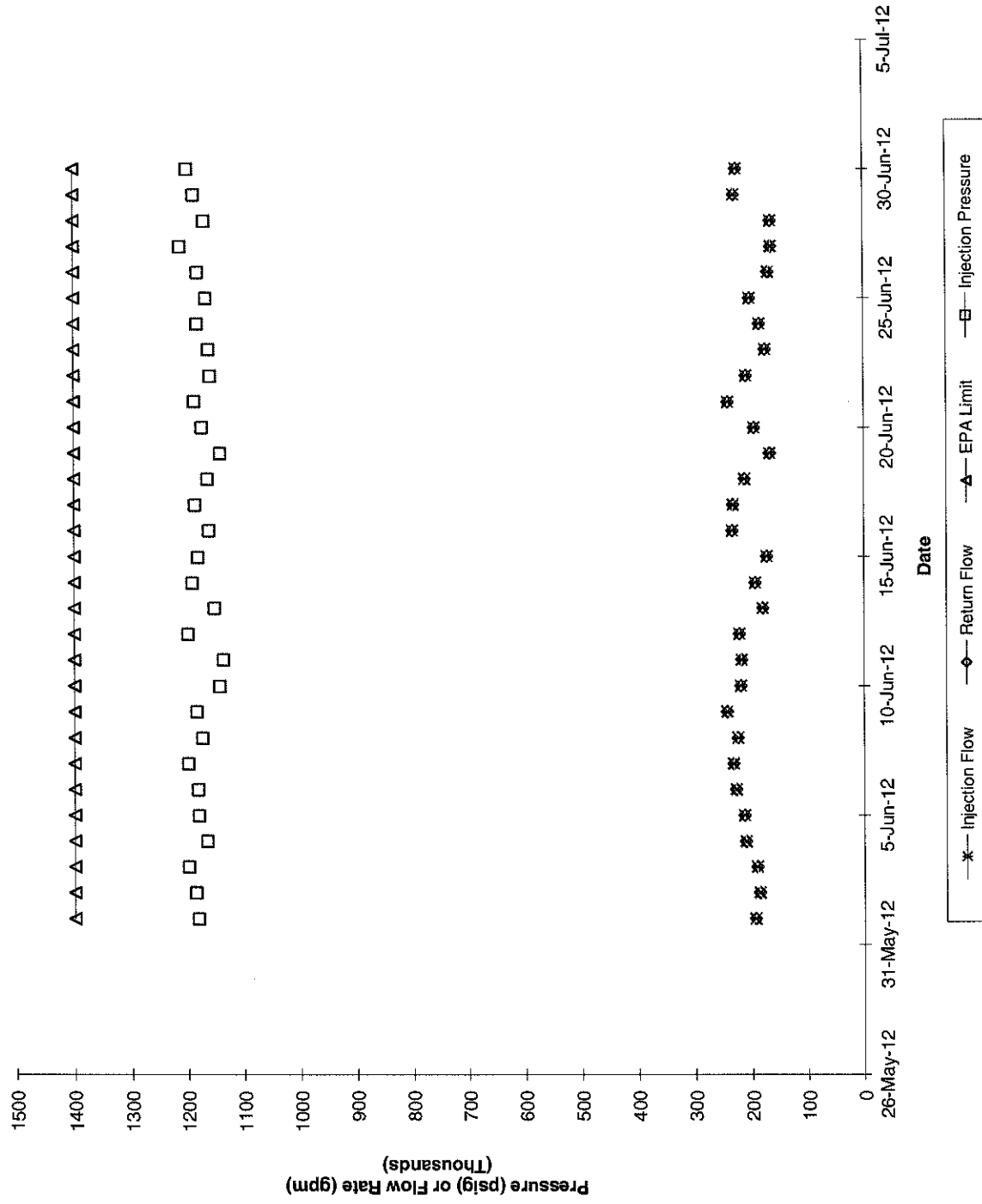
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



CAVITY 2040 ✓



Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in

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CAVITY 2061 ✓

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EPA, REGION 5

Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	1183	126	126
2-Jun-12	1180	131	131
3-Jun-12	1200	96	96
4-Jun-12	1167	97	97
5-Jun-12	1182	104	104
6-Jun-12	1183	110	110
7-Jun-12	1200	80	80
8-Jun-12	1175	107	107
9-Jun-12	1185	108	108
10-Jun-12	1144	107	107
11-Jun-12	1138	116	116
12-Jun-12	1200	79	79
13-Jun-12	1153	73	73
14-Jun-12	1158	104	104
15-Jun-12	1183	70	70
16-Jun-12	1163	81	81
17-Jun-12	1188	106	106
18-Jun-12	1165	96	96
19-Jun-12	1142	79	79
20-Jun-12	1175	108	108
21-Jun-12	1188	142	142
22-Jun-12	1160	103	103
23-Jun-12	1163	128	128
24-Jun-12	1183	115	115
25-Jun-12	1175	116	116
26-Jun-12	1175	66	66
27-Jun-12	1213	93	93
28-Jun-12	1170	95	95
29-Jun-12	1188	77	77
30-Jun-12	1200	109	109

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Cavity 2061

Jun-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1176	101	101

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
27-Jun-12	1213	93

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
11-Jun-12	1138	116

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
21-Jun-12	142	1188

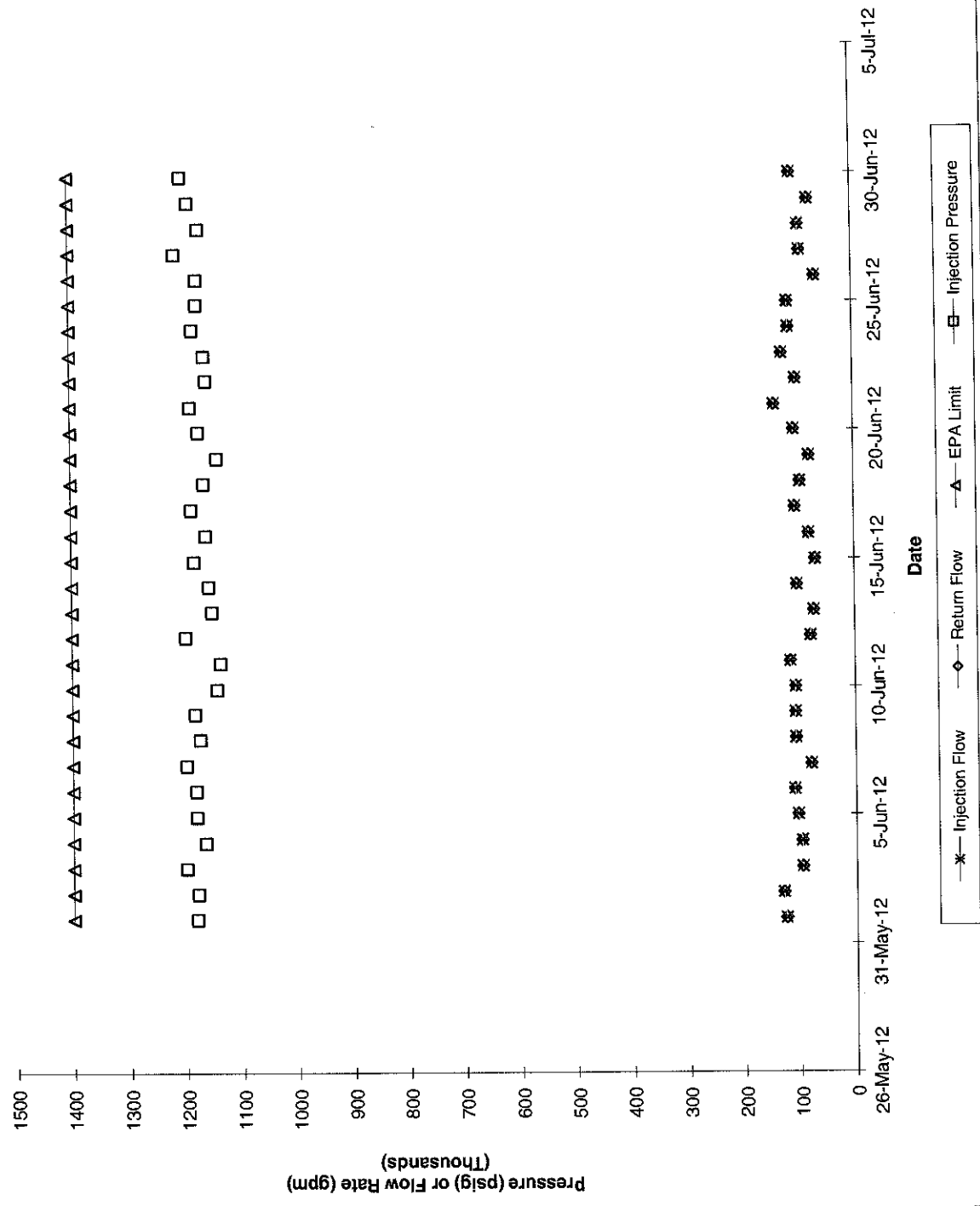
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# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



CAVITY 2062

Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jun-12	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in

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Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

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July 17, 2012

JUL 20 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

UIC BRANCH  
EPA, REGION 5

Attn: Lisa Perenchio

SUBJ: **Second Quarter Report** – Solution Mining Wells  
For the period of April 1, 2012 – June 30, 2012  
Permit No.: MI-133-3G-A002

1. Solution Mining operations from Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061, Cavity 2062 were conducted during the quarter.
2. Well re-work reports for all well workovers during the period were submitted under separate cover by Doug Patulski, Minefield Superintendent.
3. The flowrates to and from the solution mining wells are monitored continuously. The required quarterly well injection/return balance demonstrations for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062 are attached.
4. The fluid level in the injection zone is "at surface".
5. Attached are copies of the well fluid chemical analyses for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062.
6. Attached are the chemical analyses of the fluid samples obtained from the ground water monitoring wells.

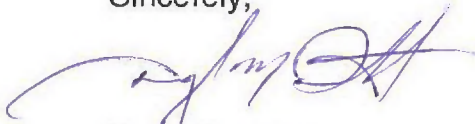


The requirements of Part I (E)(10), Part II (B)(2) and Part III (C)(3) of Permit No. MI-133-3G-A002 are being met. The samples and measurements are representative of the monitoring activity and the analysis complies with the methods and procedures approved in the Waste Analysis Plan.

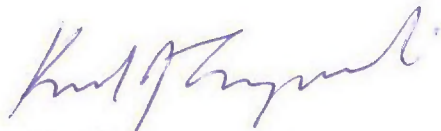
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Please contact me at (231) 832-8800 if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "Doug Patulski", with a stylized flourish at the end.

Doug Patulski  
Minefield Superintendent

A handwritten signature in blue ink, appearing to read "Karl Tomaszewski", with a stylized flourish at the end.

Karl Tomaszewski  
Site Manager

Attachments

Quarterly Injection/Return Flow Balances  
Cavity 1010

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<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	shut in	shut in	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in	shut in	shut in
1-May-12	shut in	shut in	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in	shut in	shut in

RECEIVED

Quarterly Injection/Return Flow Balances  
Cavity 1010

JUL 20 2012

UIC BRANCH  
EPA REGION 5

16-May-12	shut in	shut in	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in	shut in	shut in
1-Jun-12	shut in	shut in	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in	shut in	shut in
Averages	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances  
Cavity 1020**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	251	0.0	251	255	0.98
2-Apr-12	294	4.0	298	312	0.96
3-Apr-12	308	4.8	313	310	1.01
4-Apr-12	339	5.8	345	333	1.04
5-Apr-12	79	0.0	79	81	0.98
6-Apr-12	216	4.0	220	213	1.03
7-Apr-12	331	4.1	335	314	1.07
8-Apr-12	339	4.5	344	346	0.99
9-Apr-12	80	0.9	81	74	1.09
10-Apr-12	shut in	shut in	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in	shut in	shut in
1-May-12	shut in	shut in	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in	shut in	shut in
7-May-12	220	6.6	227	220	1.03
8-May-12	241	6.7	248	258	0.96
9-May-12	230	6.6	237	257	0.92
10-May-12	228	6.4	234	255	0.92
11-May-12	220	4.9	225	236	0.95
12-May-12	226	6.0	232	255	0.91
13-May-12	245	5.5	251	274	0.91
14-May-12	249	5.8	255	275	0.93
15-May-12	240	4.8	245	266	0.92

**Quarterly Injection/Return Flow Balances**  
**Cavity 1020**

16-May-12	376	4.7	381	121	3.15
17-May-12	119	4.9	124	407	0.30
18-May-12	201	4.0	205	223	0.92
19-May-12	248	5.0	253	269	0.94
20-May-12	245	0.0	245	269	0.91
21-May-12	234	5.2	239	255	0.94
22-May-12	238	4.8	243	249	0.98
23-May-12	228	4.5	233	266	0.87
24-May-12	247	5.3	252	272	0.93
25-May-12	279	4.7	284	320	0.89
26-May-12	278	4.7	283	308	0.92
27-May-12	296	6.3	302	661	0.46
28-May-12	268	5.6	274	289	0.95
29-May-12	266	6.1	272	292	0.93
30-May-12	269	5.6	275	305	0.90
31-May-12	305	5.5	311	334	0.93
1-Jun-12	250	4.8	255	286	0.89
2-Jun-12	297	4.2	301	319	0.94
3-Jun-12	292	4.6	297	320	0.93
4-Jun-12	291	3.9	295	326	0.90
5-Jun-12	319	3.9	323	350	0.92
6-Jun-12	299	1.8	301	324	0.93
7-Jun-12	341	4.8	346	310	1.12
8-Jun-12	308	5.2	313	337	0.93
9-Jun-12	291	5.1	296	339	0.87
10-Jun-12	327	5.0	332	341	0.97
11-Jun-12	323	4.9	328	347	0.94
12-Jun-12	313	5.0	318	345	0.92
13-Jun-12	301	4.9	306	333	0.92
14-Jun-12	317	5.5	323	354	0.91
15-Jun-12	shut in	shut in	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in	shut in	shut in
24-Jun-12	290	4.9	295	301	0.98
25-Jun-12	306	5.4	311	318	0.98
26-Jun-12	266	5.7	272	314	0.87
27-Jun-12	307	4.9	312	318	0.98
28-Jun-12	328	4.0	332	339	0.98
29-Jun-12	337	4.9	342	368	0.93
30-Jun-12	240	4.8	245	235	1.04
Averages	269	4.7	274	295	0.97

**Quarterly Injection/Return Flow Balances**  
**Cavity 1040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	shut in	shut in	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in	shut in	shut in
1-May-12	shut in	shut in	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances**  
**Cavity 1040**

16-May-12	shut in	shut in	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in	shut in	shut in
1-Jun-12	shut in	shut in	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in	shut in	shut in
Averages	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances**  
**Cavity 1050**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	139	0.0	139	139	1.00
2-Apr-12	170	3.2	173	170	1.02
3-Apr-12	193	4.6	198	193	1.02
4-Apr-12	182	4.4	186	182	1.02
5-Apr-12	90	0.0	90	90	1.00
6-Apr-12	116	5.2	121	116	1.04
7-Apr-12	130	5.0	135	130	1.04
8-Apr-12	146	4.7	151	146	1.03
9-Apr-12	147	2.7	150	147	1.02
10-Apr-12	150	3.3	153	150	1.02
11-Apr-12	145	3.8	149	145	1.03
12-Apr-12	152	4.0	156	152	1.03
13-Apr-12	71	0.0	71	71	1.00
14-Apr-12	153	4.9	158	153	1.03
15-Apr-12	205	4.7	210	205	1.02
16-Apr-12	209	5.0	214	209	1.02
17-Apr-12	205	5.0	210	205	1.02
18-Apr-12	209	4.9	214	209	1.02
19-Apr-12	208	5.0	213	208	1.02
20-Apr-12	144	2.5	147	144	1.02
21-Apr-12	112	5.4	117	112	1.05
22-Apr-12	229	5.3	234	229	1.02
23-Apr-12	216	5.0	221	216	1.02
24-Apr-12	219	5.1	224	219	1.02
25-Apr-12	159	5.1	164	159	1.03
26-Apr-12	128	4.9	133	128	1.04
27-Apr-12	180	4.2	184	180	1.02
28-Apr-12	158	5.0	163	158	1.03
29-Apr-12	144	5.3	149	144	1.04
30-Apr-12	144	5.7	150	144	1.04
1-May-12	145	6.0	151	145	1.04
2-May-12	179	4.6	184	179	1.03
3-May-12	160	3.4	163	160	1.02
4-May-12	157	5.3	162	157	1.03
5-May-12	157	5.3	162	157	1.03
6-May-12	144	5.1	149	144	1.04
7-May-12	180	5.2	185	180	1.03
8-May-12	206	6.0	212	206	1.03
9-May-12	153	5.9	159	153	1.04
10-May-12	142	5.6	148	142	1.04
11-May-12	147	0.0	147	147	1.00
12-May-12	166	4.1	170	166	1.02
13-May-12	190	2.9	193	190	1.02
14-May-12	165	3.8	169	165	1.02
15-May-12	153	4.6	158	153	1.03



**Quarterly Injection/Return Flow Balances**  
**Cavity 1050**

16-May-12	144	4.0	148	144	1.03
17-May-12	180	3.9	184	180	1.02
18-May-12	142	3.6	146	142	1.03
19-May-12	149	4.3	153	149	1.03
20-May-12	133	0.0	133	133	1.00
21-May-12	156	6.6	163	156	1.04
22-May-12	142	5.2	147	142	1.04
23-May-12	141	3.3	144	141	1.02
24-May-12	155	3.7	159	155	1.02
25-May-12	220	3.4	223	220	1.02
26-May-12	198	3.9	202	198	1.02
27-May-12	171	4.1	175	171	1.02
28-May-12	142	4.6	147	142	1.03
29-May-12	149	4.9	154	149	1.03
30-May-12	158	5.6	164	158	1.04
31-May-12	176	5.6	182	176	1.03
1-Jun-12	155	4.5	160	155	1.03
2-Jun-12	154	0.0	154	154	1.00
3-Jun-12	160	6.0	166	160	1.04
4-Jun-12	149	4.0	153	149	1.03
5-Jun-12	169	4.0	173	169	1.02
6-Jun-12	149	1.8	151	149	1.01
7-Jun-12	157	4.4	161	157	1.03
8-Jun-12	174	3.4	177	174	1.02
9-Jun-12	147	3.3	150	147	1.02
10-Jun-12	144	2.9	147	144	1.02
11-Jun-12	128	4.6	133	128	1.04
12-Jun-12	163	5.2	168	163	1.03
13-Jun-12	148	5.1	153	148	1.03
14-Jun-12	162	5.3	167	162	1.03
15-Jun-12	151	5.1	156	151	1.03
16-Jun-12	137	4.6	142	137	1.03
17-Jun-12	170	4.0	174	170	1.02
18-Jun-12	148	5.9	154	148	1.04
19-Jun-12	188	4.8	193	188	1.03
20-Jun-12	143	4.0	147	143	1.03
21-Jun-12	167	4.4	171	167	1.03
22-Jun-12	156	4.0	160	156	1.03
23-Jun-12	144	0.0	144	144	1.00
24-Jun-12	159	5.3	164	159	1.03
25-Jun-12	157	5.8	163	157	1.04
26-Jun-12	151	4.8	156	151	1.03
27-Jun-12	169	5.0	174	169	1.03
28-Jun-12	156	4.9	161	156	1.03
29-Jun-12	140	5.3	145	140	1.04
30-Jun-12	127	5.8	133	127	1.05

Averages	159	4.2	164	159	1.03
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**Quarterly Injection/Return Flow Balances**  
**Cavity 1060**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	shut in	shut in	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in	shut in	shut in
9-Apr-12	295	5.5	301	302	1.00
10-Apr-12	292	5.9	298	280	1.06
11-Apr-12	285	7.0	292	282	1.04
12-Apr-12	285	7.4	292	314	0.93
13-Apr-12	319	0.0	319	305	1.05
14-Apr-12	333	6.2	339	355	0.96
15-Apr-12	347	6.7	354	388	0.91
16-Apr-12	375	6.0	381	394	0.97
17-Apr-12	368	5.3	373	384	0.97
18-Apr-12	368	5.2	373	380	0.98
19-Apr-12	361	5.3	366	372	0.98
20-Apr-12	299	5.5	305	291	1.05
21-Apr-12	299	6.9	306	292	1.05
22-Apr-12	354	6.6	361	391	0.92
23-Apr-12	368	5.2	373	393	0.95
24-Apr-12	375	6.2	381	391	0.97
25-Apr-12	361	0.8	362	374	0.97
26-Apr-12	375	6.5	382	383	1.00
27-Apr-12	354	5.8	360	360	1.00
28-Apr-12	354	5.2	359	354	1.01
29-Apr-12	361	5.4	366	368	1.00
30-Apr-12	333	5.3	338	341	0.99
1-May-12	340	5.0	345	349	0.99
2-May-12	347	4.9	352	375	0.94
3-May-12	347	3.1	350	350	1.00
4-May-12	368	5.4	373	363	1.03
5-May-12	355	5.8	361	366	0.99
6-May-12	347	6.1	353	370	0.95
7-May-12	111	2.2	113	122	0.93
8-May-12	shut in	shut in	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances**  
**Cavity 1060**

16-May-12	shut in	shut in	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in	shut in	shut in
1-Jun-12	shut in	shut in	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in	shut in	shut in
16-Jun-12	340	4.8	345	337	1.02
17-Jun-12	340	5.4	345	343	1.01
18-Jun-12	326	5.3	331	344	0.96
19-Jun-12	313	5.7	319	290	1.10
20-Jun-12	299	0.0	299	304	0.98
21-Jun-12	306	6.1	312	318	0.98
22-Jun-12	326	6.0	332	341	0.97
23-Jun-12	125	0.0	125	135	0.93
24-Jun-12	shut in	shut in	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in	shut in	shut in
Averages	326	5.0	331	335	0.99

**Quarterly Injection/Return Flow Balances  
Cavity 2030**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	216	0.0	216	216	1.00
2-Apr-12	241	0.0	241	241	1.00
3-Apr-12	232	0.0	232	232	1.00
4-Apr-12	203	0.0	203	203	1.00
5-Apr-12	277	0.0	277	277	1.00
6-Apr-12	308	0.0	308	308	1.00
7-Apr-12	294	0.0	294	294	1.00
8-Apr-12	292	0.0	292	292	1.00
9-Apr-12	269	0.0	269	269	1.00
10-Apr-12	259	0.0	259	259	1.00
11-Apr-12	264	0.0	264	264	1.00
12-Apr-12	286	0.0	286	286	1.00
13-Apr-12	306	0.0	306	306	1.00
14-Apr-12	318	0.0	318	318	1.00
15-Apr-12	249	0.0	249	249	1.00
16-Apr-12	265	0.0	265	265	1.00
17-Apr-12	272	0.0	272	272	1.00
18-Apr-12	288	0.0	288	288	1.00
19-Apr-12	236	0.0	236	236	1.00
20-Apr-12	241	0.0	241	241	1.00
21-Apr-12	234	0.0	234	234	1.00
22-Apr-12	293	0.0	293	293	1.00
23-Apr-12	268	0.0	268	268	1.00
24-Apr-12	151	0.0	151	151	1.00
25-Apr-12	280	0.0	280	280	1.00
26-Apr-12	248	0.0	248	248	1.00
27-Apr-12	271	0.0	271	271	1.00
28-Apr-12	194	0.0	194	194	1.00
29-Apr-12	219	0.0	219	219	1.00
30-Apr-12	182	0.0	182	182	1.00
1-May-12	232	0.0	232	232	1.00
2-May-12	172	0.0	172	172	1.00
3-May-12	190	0.0	190	190	1.00
4-May-12	226	0.0	226	226	1.00
5-May-12	169	0.0	169	169	1.00
6-May-12	225	0.0	225	225	1.00
7-May-12	238	0.0	238	238	1.00
8-May-12	244	0.0	244	244	1.00
9-May-12	260	0.0	260	260	1.00
10-May-12	247	0.0	247	247	1.00
11-May-12	202	0.0	202	202	1.00
12-May-12	228	0.0	228	228	1.00
13-May-12	235	0.0	235	235	1.00
14-May-12	238	0.0	238	238	1.00
15-May-12	195	0.0	195	195	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2030**

16-May-12	220	0.0	220	220	1.00
17-May-12	247	0.0	247	247	1.00
18-May-12	211	0.0	211	211	1.00
19-May-12	241	0.0	241	241	1.00
20-May-12	240	0.0	240	240	1.00
21-May-12	231	0.0	231	231	1.00
22-May-12	254	0.0	254	254	1.00
23-May-12	208	16.0	224	208	1.08
24-May-12	229	20.8	250	229	1.09
25-May-12	177	0.0	177	177	1.00
26-May-12	235	0.0	235	235	1.00
27-May-12	250	0.0	250	250	1.00
28-May-12	215	0.0	215	215	1.00
29-May-12	222	0.0	222	222	1.00
30-May-12	257	0.0	257	257	1.00
31-May-12	226	0.0	226	226	1.00
1-Jun-12	195	0.0	195	195	1.00
2-Jun-12	187	0.0	187	187	1.00
3-Jun-12	192	0.0	192	192	1.00
4-Jun-12	212	0.0	212	212	1.00
5-Jun-12	215	0.0	215	215	1.00
6-Jun-12	229	0.0	229	229	1.00
7-Jun-12	234	0.0	234	234	1.00
8-Jun-12	226	0.0	226	226	1.00
9-Jun-12	245	0.0	245	245	1.00
10-Jun-12	221	0.0	221	221	1.00
11-Jun-12	219	0.0	219	219	1.00
12-Jun-12	223	0.0	223	223	1.00
13-Jun-12	181	0.0	181	181	1.00
14-Jun-12	195	0.0	195	195	1.00
15-Jun-12	174	0.0	174	174	1.00
16-Jun-12	236	0.0	236	236	1.00
17-Jun-12	234	0.0	234	234	1.00
18-Jun-12	213	0.0	213	213	1.00
19-Jun-12	168	0.0	168	168	1.00
20-Jun-12	197	0.0	197	197	1.00
21-Jun-12	243	0.0	243	243	1.00
22-Jun-12	211	0.0	211	211	1.00
23-Jun-12	176	0.0	176	176	1.00
24-Jun-12	186	0.0	186	186	1.00
25-Jun-12	204	0.0	204	204	1.00
26-Jun-12	170	0.0	170	170	1.00
27-Jun-12	165	0.0	165	165	1.00
28-Jun-12	166	0.0	166	166	1.00
29-Jun-12	231	0.0	231	231	1.00
30-Jun-12	228	0.0	228	228	1.00
Averages	229	0.4	229	229	1.00

**Quarterly Injection/Return Flow Balances**  
**Cavity 2040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	shut in	shut in	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in	shut in	shut in
1-May-12	shut in	shut in	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances**  
**Cavity 2040**

16-May-12	shut in	shut in	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in	shut in	shut in
1-Jun-12	shut in	shut in	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in	shut in	shut in

Averages	shut in	shut in	shut in	shut in	shut in
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**Quarterly Injection/Return Flow Balances  
Cavity 2061**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	121	0.0	121	121	1.00
2-Apr-12	60	0.0	60	60	1.00
3-Apr-12	18	0.0	18	18	1.00
4-Apr-12	shut in	shut in	shut in	shut in	shut in
5-Apr-12	193	0.0	193	193	1.00
6-Apr-12	216	0.0	216	216	1.00
7-Apr-12	98	0.0	98	98	1.00
8-Apr-12	99	0.0	99	99	1.00
9-Apr-12	125	0.0	125	125	1.00
10-Apr-12	99	0.0	99	99	1.00
11-Apr-12	116	0.0	116	116	1.00
12-Apr-12	62	0.0	62	62	1.00
13-Apr-12	51	0.0	51	51	1.00
14-Apr-12	shut in	shut in	shut in	shut in	shut in
15-Apr-12	109	0.0	109	109	1.00
16-Apr-12	121	0.0	121	121	1.00
17-Apr-12	88	0.0	88	88	1.00
18-Apr-12	79	0.0	79	79	1.00
19-Apr-12	94	0.0	94	94	1.00
20-Apr-12	72	0.0	72	72	1.00
21-Apr-12	80	0.0	80	80	1.00
22-Apr-12	94	0.0	94	94	1.00
23-Apr-12	141	0.0	141	141	1.00
24-Apr-12	155	0.0	155	155	1.00
25-Apr-12	113	0.0	113	113	1.00
26-Apr-12	84	0.0	84	84	1.00
27-Apr-12	113	0.0	113	113	1.00
28-Apr-12	103	0.0	103	103	1.00
29-Apr-12	107	0.0	107	107	1.00
30-Apr-12	57	0.0	57	57	1.00
1-May-12	shut in	shut in	shut in	shut in	shut in
2-May-12	0	0.0	0	74	0.00
3-May-12	69	0.0	69	69	1.00
4-May-12	106	0.0	106	106	1.00
5-May-12	111	0.0	111	111	1.00
6-May-12	102	0.0	102	102	1.00
7-May-12	137	0.0	137	137	1.00
8-May-12	51	0.0	51	51	1.00
9-May-12	72	0.0	72	72	1.00
10-May-12	127	0.0	127	127	1.00
11-May-12	161	0.0	161	161	1.00
12-May-12	123	0.0	123	123	1.00
13-May-12	92	0.0	92	92	1.00
14-May-12	90	0.0	90	90	1.00
15-May-12	88	0.0	88	88	1.00



**Quarterly Injection/Return Flow Balances**  
**Cavity 2061**

16-May-12	94	0.0	94	94	1.00
17-May-12	81	0.0	81	81	1.00
18-May-12	97	0.0	97	97	1.00
19-May-12	111	0.0	111	111	1.00
20-May-12	107	0.0	107	107	1.00
21-May-12	103	0.0	103	103	1.00
22-May-12	130	0.0	130	130	1.00
23-May-12	98	0.0	98	98	1.00
24-May-12	87	0.0	87	87	1.00
25-May-12	shut in	shut in	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in	shut in	shut in
28-May-12	71	0.0	71	71	1.00
29-May-12	61	0.0	61	61	1.00
30-May-12	112	0.0	112	112	1.00
31-May-12	145	0.0	145	145	1.00
1-Jun-12	126	0.0	126	126	1.00
2-Jun-12	131	0.0	131	131	1.00
3-Jun-12	96	0.0	96	96	1.00
4-Jun-12	97	0.0	97	97	1.00
5-Jun-12	104	0.0	104	104	1.00
6-Jun-12	110	0.0	110	110	1.00
7-Jun-12	80	0.0	80	80	1.00
8-Jun-12	107	0.0	107	107	1.00
9-Jun-12	108	0.0	108	108	1.00
10-Jun-12	107	0.0	107	107	1.00
11-Jun-12	116	0.0	116	116	1.00
12-Jun-12	79	0.0	79	79	1.00
13-Jun-12	73	0.0	73	73	1.00
14-Jun-12	104	0.0	104	104	1.00
15-Jun-12	70	0.0	70	70	1.00
16-Jun-12	81	0.0	81	81	1.00
17-Jun-12	106	0.0	106	106	1.00
18-Jun-12	96	0.0	96	96	1.00
19-Jun-12	79	0.0	79	79	1.00
20-Jun-12	108	0.0	108	108	1.00
21-Jun-12	142	0.0	142	142	1.00
22-Jun-12	103	0.0	103	103	1.00
23-Jun-12	128	0.0	128	128	1.00
24-Jun-12	115	0.0	115	115	1.00
25-Jun-12	116	0.0	116	116	1.00
26-Jun-12	66	0.0	66	66	1.00
27-Jun-12	93	0.0	93	93	1.00
28-Jun-12	95	0.0	95	95	1.00
29-Jun-12	77	0.0	77	77	1.00
30-Jun-12	109	0.0	109	109	1.00
Averages	100	0.0	100	101	0.99

**Quarterly Injection/Return Flow Balances  
Cavity 2062**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Apr-12	shut in	shut in	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in	shut in	shut in
1-May-12	shut in	shut in	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances  
Cavity 2062**

16-May-12	shut in	shut in	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in	shut in	shut in
1-Jun-12	shut in	shut in	shut in	shut in	shut in
2-Jun-12	shut in	shut in	shut in	shut in	shut in
3-Jun-12	shut in	shut in	shut in	shut in	shut in
4-Jun-12	shut in	shut in	shut in	shut in	shut in
5-Jun-12	shut in	shut in	shut in	shut in	shut in
6-Jun-12	shut in	shut in	shut in	shut in	shut in
7-Jun-12	shut in	shut in	shut in	shut in	shut in
8-Jun-12	shut in	shut in	shut in	shut in	shut in
9-Jun-12	shut in	shut in	shut in	shut in	shut in
10-Jun-12	shut in	shut in	shut in	shut in	shut in
11-Jun-12	shut in	shut in	shut in	shut in	shut in
12-Jun-12	shut in	shut in	shut in	shut in	shut in
13-Jun-12	shut in	shut in	shut in	shut in	shut in
14-Jun-12	shut in	shut in	shut in	shut in	shut in
15-Jun-12	shut in	shut in	shut in	shut in	shut in
16-Jun-12	shut in	shut in	shut in	shut in	shut in
17-Jun-12	shut in	shut in	shut in	shut in	shut in
18-Jun-12	shut in	shut in	shut in	shut in	shut in
19-Jun-12	shut in	shut in	shut in	shut in	shut in
20-Jun-12	shut in	shut in	shut in	shut in	shut in
21-Jun-12	shut in	shut in	shut in	shut in	shut in
22-Jun-12	shut in	shut in	shut in	shut in	shut in
23-Jun-12	shut in	shut in	shut in	shut in	shut in
24-Jun-12	shut in	shut in	shut in	shut in	shut in
25-Jun-12	shut in	shut in	shut in	shut in	shut in
26-Jun-12	shut in	shut in	shut in	shut in	shut in
27-Jun-12	shut in	shut in	shut in	shut in	shut in
28-Jun-12	shut in	shut in	shut in	shut in	shut in
29-Jun-12	shut in	shut in	shut in	shut in	shut in
30-Jun-12	shut in	shut in	shut in	shut in	shut in

Averages	shut in	shut in	shut in	shut in	shut in
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**Cluster 1  
2012 Monitor Well Results  
2<sup>nd</sup> Quarter**

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EPA, REGION 5**

Date	Well Number	Chloride Concentration (mg/L)
June 2012	Cluster 1 M.W. 1	496.3
June 2012	Cluster 1 M.W. 2	819.0
June 2012	Cluster 1 M.W. 3	49.6
June 2012	Cluster 1 M.W. 4	1,489.0
June 2012	Cluster 1 M.W. 5	427.2
June 2012	Cluster 1 M.W. 6	159.5
June 2012	Cluster 1 M.W. 7	453.8
June 2012	Cluster 1 M.W. 8	398.8
June 2012	Cluster 1 M.W. 9	8012.4
June 2012	Cluster 1 M.W. 10	3048.9
June 2012	Cluster 1 M.W. 11	563.7
June 2012	Cluster 1 M.W. 12	584.9
June 2012	Cluster 1 M.W. 13	3722.5
June 2012	Cluster 1 M.W. 14	253.5
June 2012	Cluster 1 M.W. 34	2198.1
June 2012	Cluster 1 M.W. 35	115.2
June 2012	Cluster 1 M.W. 36	8.9
June 2012	Cluster 1 M.W. 37	2286.7
June 2012	Cluster 1 M.W. 38	3.5
June 2012	Cluster 1 M.W. 39	17.7
June 2012	Cluster 1 M.W. 40	234.0

**Cluster 2  
2012 Monitor Well Results  
2nd Quarter**

<b>Date</b>	<b>Well Number</b>	<b>Chloride Concentration (mg/L)</b>
June 2012	Cluster 2 M.W. 1	124.1
June 2012	Cluster 2 M.W. 2	Dry well
June 2012	Cluster 2 M.W. 4	77.9
June 2012	Cluster 2 M.W. 5	434.3
June 2012	Cluster 2 M.W. 6	28.4
June 2012	Cluster 2 M.W. 33	42.5

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
6-12-12	10:30 A.M.	1 (PP-1)	Antonia Petito
6-12-12	10:50 A.M.	2 (PP-2)	Antonia Petito
6-12-12	11:10 A.M.	3 (PP-3)	Antonia Petito
6-12-12	11:30 A.M.	4 (W-126-1)	Antonia Petito
6-12-12	11:50 A.M.	5 (W-126-2)	Antonia Petito
6-12-12	12:00 P.M.	6 (CL2-1)	Antonia Petito
6-12-12	12:10 P.M.	7 (CL2-5)	Antonia Petito
6-12-12	12:50 P.M.	8 (CL2-5)	Antonia Petito
6-12-12	1:30 P.M.	9 (CL2-4)	Antonia Petito
Dry Well		10 (CL2-2)	
6-12-12	2:15 P.M.	11 (CL1-3)	Antonia Petito
6-12-12	2:40 P.M.	12 (CL1-6)	Antonia Petito
		13 (CL1-5)	
		14 (CL1-7)	
		15 (CL1-1)	
		16 (CL1-2)	
		17 (CL1-9)	
		18 (CL1-11)	
		19 (CL1-8)	
		20 (CL1-4)	
		21 (PW94-2)	
		22 (PW94-1)	
		23 (CL1-10)	
		24 (T-126-1)	
		25 (CL1-12)	
		26 (T-126-2)	
		27 (T-126-3)	
		28 (T-126-5)	
		29 (T-126-4)	
		30 (CL1-13)	
6-12-12	2:30 P.M.	31 (CL1-14)	Antonia Petito
6-12-12	1:30 P.M.	32 (PW-32)	Antonia Petito
6-12-12	2:00 P.M.	33 (CL2-33)	Antonia Petito
		34 (CL1-34)	
		35 (MWV-35)	
		36 (MWV-36)	
		37 (MWV-37)	
		38 (MWV-38)	
		39 (MWV-39)	
		40 (MWV-40)	
		41 (PW-41)	

Received in Lab By (Name/Signature)

Alison Vanko

Date Received

K: 6/12/12

Time Received

3:00 PM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED TIME SAMPLED SAMPLE # SAMPLER NAME/SIGNATURE

		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (W-126-1)	
		5 (W-126-2)	
		6 (CL2-1)	
		7 (CL2-5)	
		8 (CL2-6)	
		9 (CL2-4)	
Dry Well		10 (CL2-2)	
		11 (CL1-3)	
		12 (CL1-6)	
6-13-12	10:00 AM	13 (CL1-5)	Antonia Petito
6-13-12	9:55 AM	14 (CL1-7)	Antonia Petito
6-13-12	9:50 AM	15 (CL1-1)	Antonia Petito
6-13-12	9:45 AM	16 (CL1-2)	Antonia Petito
6-13-12	1:00 PM	17 (CL1-9)	Antonia Petito
6-13-12	2:35 PM	18 (CL1-11)	Antonia Petito
6-13-12	1:15 PM	19 (CL1-8)	Antonia Petito
6-13-12	1:05 PM	20 (CL1-4)	Antonia Petito
6-13-12	2:30 PM	21 (PW94-2)	Antonia Petito
		22 (PW94-1)	
6-13-12	1:10 PM	23 (CL1-10)	Antonia Petito
6-13-12	1:20 PM	24 (T-126-1)	Antonia Petito
		25 (CL1-12)	
6-13-12	1:40 PM	26 (T-126-2)	Antonia Petito
6-13-12	2:00 PM	27 (T-126-3)	Antonia Petito
6-13-12	2:15 PM	28 (T-126-5)	Antonia Petito
6-13-12	2:25 PM	29 (T-126-4)	Antonia Petito
		30 (CL1-13)	
		31 (CL1-14)	
		32 (PW-32)	
		33 (CL2-33)	
		34 (CL1-34)	
		35 (NMV-35)	
		36 (NMV-36)	
		37 (NMV-37)	
		38 (NMV-38)	
		39 (NMV-39)	
		40 (NMV-40)	
6-13-12	2:30 PM	41 (PW-41)	Antonia Petito

Received in Lab By (Name/Signature)

Allison Vargo

Date Received

6/13/12

Time Received

2:50 PM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (WV-126-1)	
		5 (WV-126-2)	
		6 (CL2-1)	
		7 (CL2-6)	
		8 (CL2-6)	
		9 (CL2-4)	
Dry Well		10 (CL2-2)	
		11 (CL1-3)	
		12 (CL1-6)	
		13 (CL1-5)	
		14 (CL1-7)	
		15 (CL1-1)	
		16 (CL1-2)	
		17 (CL1-9)	
		18 (CL1-11)	
		19 (CL1-8)	
		20 (CL1-4)	
		21 (PW94-2)	
*6-14-12	10:15 AM	22 (PW94-1)	Antonia Petito
		23 (CL1-10)	
		24 (T-126-1)	
*6-14-12	9:45 AM	25 (CL1-12)	Antonia Petito
		26 (T-126-2)	
		27 (T-126-3)	
		28 (T-126-5)	
		29 (T-126-4)	
*6-14-12	10:30 AM	30 (CL1-13)	Antonia Petito
		31 (CL1-14)	
		32 (PW-32)	
		33 (CL2-33)	
*6-14-12	9:30 AM	34 (CL1-34)	Antonia Petito
X 6-14-12	9:15 AM	35 (WV-35)	Antonia Petito
X 6-14-12	9:55 AM	36 (WV-36)	Antonia Petito
X 6-14-12	11:20 AM	37 (WV-37)	Antonia Petito
X 6-14-12	10:45 AM	38 (WV-38)	Antonia Petito
X 6-14-12	11:35 AM	39 (WV-39)	Antonia Petito
X 6-14-12	11:00 AM	40 (WV-40)	Antonia Petito
		41 (PW-41)	

Received in Lab By (Name/Signature)

Allison Vance

Date Received

6/14/12

Time Received

1:00 PM





July 02, 2012

Mosaic Potash - Hersey  
Attn: Ms. Allison VanOs  
1395 - 135th Avenue  
Hersey, MI 49639

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UIC BRANCH  
EPA, REGION 5

**Project: Quarterly Monitoring of Inorganic Pollutants**

Dear Ms. Allison VanOs,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

Work Order	Received	Description
1206207	06/13/2012	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#10-046-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#002841); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#03068); Michigan DPH (#0034); Minnesota DPH (#367345); New York ELAP (#44950); North Carolina DNRE (#659); Texas CEQ (#T104704495-11-1); Virginia DCLS (#1239); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-09-00163).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Jennifer L. Rice  
Project Chemist



## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: Quarterly Monitoring of Inorganic Pollutants  
Client Sample ID: **Disposal**  
Lab Sample ID: **1206207-01**  
Matrix: Water

Work Order: **1206207**  
Description: Laboratory Services  
Sampled: 06/12/12 08:00  
Sampled By: A.V.  
Received: 06/13/12 09:45

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Barium	86	10	ug/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536
Calcium	330	50	mg/L	100	USEPA-6010C	06/19/12 08:46	KLV	1207536
Cobalt	<10	10	ug/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536
Copper	18	10	ug/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536
Iron	370	50	ug/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536
Lead	<50	50	ug/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536
Magnesium	66	0.50	mg/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536
Manganese	110	10	ug/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536
*Selenium	7.1	5.0	ug/L	5	USEPA-6020A	06/20/12 11:28	KLV	1207538
Sodium	7000	50	mg/L	100	USEPA-6010C	06/19/12 08:46	KLV	1207536
Zinc	<20	20	ug/L	1	USEPA-6010C	06/19/12 12:57	KLV	1207536

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## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: Quarterly Monitoring of Inorganic Pollutants  
Client Sample ID: **Disposal**  
Lab Sample ID: **1206207-01**  
Matrix: Water

Work Order: **1206207**  
Description: Laboratory Services  
Sampled: 06/12/12 08:00  
Sampled By: A.V.  
Received: 06/13/12 09:45

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	97	20	mg/L	1	SM 2320 B 20th	06/22/12 08:45	SKA	1207799
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B 20th	06/22/12 08:45	SKA	1207800
Alkalinity, Total	97	20	mg/L	1	SM 2320 B 20th	06/22/12 08:45	SKA	1207801
*Bromide	<300	300	mg/L	100	ASTM D 1246-95 (99)	06/20/12 14:46	KCS	1207715
Chloride	14000	500	mg/L	500	SM 4500-Cl E 20th	06/22/12 13:01	LMA	1207853
Conductivity @ 25° C	41790	5	umhos/cm	1	SM 2510 B 20th	06/19/12 15:04	KCS	1207654
*pH	7.5	1.0	pH Units	1	SM 4500-H B 20th	06/14/12 15:51	SKA	1207440
*Oxidation/Reduction Potential	241	1	mV	1	ASTM D 1498-76	06/14/12 07:30	LMA	1207420
Sulfate	260	50	mg/L	10	ASTM D516-90 (02)	06/21/12 12:37	LMA	1207792
Residue, Dissolved @ 180° C	29300	2500	mg/L	1	SM 2540 C 20th	06/14/12 13:42	KCS	1207467
Specific Gravity	1.0220	0.7000	@ 60 °F	1	ASTM D 1429-79	06/22/12 16:00	HLB	1207836
*Carbon, Total Organic	<1.0	1.0	mg/L	1	SM 5310 C 20th	06/15/12 14:33	KAR	1207569
*Sulfide, Total	2.2	1.0	mg/L	1	SM 4500-S2 F 20th	06/15/12 14:20	KAR	1207595

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## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: Quarterly Monitoring of Inorganic Pollutants  
Client Sample ID: **Recycle**  
Lab Sample ID: **1206207-02**  
Matrix: Water

Work Order: **1206207**  
Description: Laboratory Services  
Sampled: 06/12/12 08:15  
Sampled By: A.V.  
Received: 06/13/12 09:45

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
*Barium	200	50	ug/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Calcium	1300	2.5	mg/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Cobalt	<50	50	ug/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Copper	<50	50	ug/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Iron	1300	250	ug/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Lead	<250	250	ug/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Magnesium	94	2.5	mg/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Manganese	140	50	ug/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536
*Selenium	<100	100	ug/L	100	USEPA-6020A	06/20/12 11:16	KLV	1207538
Sodium	110000	500	mg/L	1000	USEPA-6010C	06/19/12 08:50	KLV	1207536
*Zinc	<100	100	ug/L	5	USEPA-6010C	06/19/12 13:02	KLV	1207536

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## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: Quarterly Monitoring of Inorganic Pollutants  
Client Sample ID: **Recycle**  
Lab Sample ID: **1206207-02**  
Matrix: Water

Work Order: **1206207**  
Description: Laboratory Services  
Sampled: 06/12/12 08:15  
Sampled By: A.V.  
Received: 06/13/12 09:45

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	41	20	mg/L	1	SM 2320 B 20th	06/22/12 08:45	SKA	1207799
Alkalinity, Carbonate	<2.0	2.0	mg/L	1	SM 2320 B 20th	06/22/12 08:45	SKA	1207800
*Bromide	960	600	mg/L	200	ASTM D 1246-95 (99)	06/20/12 14:46	KCS	1207715
Conductivity @ 25° C	224000	5	umhos/cm	1	SM 2510 B 20th	06/19/12 15:04	KCS	1207654
Specific Gravity	1.2118	0.7000	@ 60 °F	1	ASTM D 1429-79	06/22/12 16:00	HLB	1207836
*Carbon, Total Organic	<1.0	1.0	mg/L	1	SM 5310 C 20th	06/15/12 14:43	KAR	1207569
Alkalinity, Total	41	20	mg/L	1	SM 2320 B 20th	06/22/12 08:45	SKA	1207801
*Oxidation/Reduction Potential	139	1	mV	1	ASTM D 1498-76	06/14/12 07:30	LMA	1207420
*pH	6.5	1.0	pH Units	1	SM 4500-H B 20th	06/14/12 15:51	SKA	1207440
Residue, Dissolved @ 180° C	310000	5000	mg/L	1	SM 2540 C 20th	06/14/12 13:42	KCS	1207467
Chloride	170000	2500	mg/L	2500	SM 4500-Cl E 20th	06/22/12 13:01	LMA	1207853
Sulfate	2200	500	mg/L	100	ASTM D516-90 (02)	06/21/12 14:15	LMA	1207792
Sulfide, Total	2.8	1.0	mg/L	1	SM 4500-S2 F 20th	06/15/12 14:20	KAR	1207595

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## STATEMENT OF DATA QUALIFICATIONS

### Total Metals by EPA 6000/7000 Series Methods

**Qualification:** The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-6010C

Sample/Analyte:	1206207-02	Recycle	Barium
	1206207-02	Recycle	Calcium
	1206207-02	Recycle	Cobalt
	1206207-02	Recycle	Copper
	1206207-02	Recycle	Iron
	1206207-02	Recycle	Lead
	1206207-02	Recycle	Magnesium
	1206207-02	Recycle	Manganese
	1206207-02	Recycle	Zinc

Analysis: USEPA-6020A

Sample/Analyte:	1206207-02	Recycle	Selenium
-----------------	------------	---------	----------

**Qualification:** Due to sample matrix-related Internal Standard failure, the sample was reanalyzed at dilution. The RL for this analyte has been elevated.

Analysis: USEPA-6020A

Sample/Analyte:	1206207-01	Disposal	Selenium
-----------------	------------	----------	----------

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## STATEMENT OF DATA QUALIFICATIONS

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

**Qualification:** The quality control batch(s), associated with the following samples and analyses, do not contain an MS/MSD or MS/DUP because client specific matrix QC was not requested. An LCS and LCSD were analyzed as the measure of batch precision and accuracy.

Analysis: ASTM D 1246-95 (99)

Sample/Analyte:	1206207-01	Disposal	Bromide
	1206207-02	Recycle	Bromide

Analysis: SM 5310 C 20th

Sample/Analyte:	1206207-01	Disposal	Carbon, Total Organic
	1206207-02	Recycle	Carbon, Total Organic

**Qualification:** The laboratory duplicate RPD for this sample exceeded the control limit. Since the initial and/or the duplicate sample result was less than 5 times the reporting limit, the initial reported sample result is not qualified.

Analysis: SM 4500-S2 F 20th

Sample/Analyte:	1206207-01	Disposal	Sulfide, Total
-----------------	------------	----------	----------------

**Qualification:** The referenced method requires analysis occur immediately after sample collection. Because analysis was not performed in the field, the reported result must be considered estimated.

Analysis: ASTM D 1498-76

Sample/Analyte:	1206207-01	Disposal	Oxidation/Reduction Potential
	1206207-02	Recycle	Oxidation/Reduction Potential

Analysis: SM 4500-H B 20th

Sample/Analyte:	1206207-01	Disposal	pH
	1206207-02	Recycle	pH

**Qualification:** The following reported test methods and analyte(s) are exceptions to our NELAP Fields of Accreditation, or for which accreditation is not required, applicable, or available.

Analysis: ASTM D 1429-79

Analyte(s): Specific Gravity

Analysis: ASTM D 1498-76

Analyte(s): Oxidation/Reduction Potential

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**TRIMATRIX**  
LABORATORIES

5550 Corporate Exchange Court SE  
Grand Rapids, MI 49512  
Phone (616) 975-4500 Fax (616) 942-7463  
www.trimatrixlabs.com

**Chain of Custody Record**

COC No. **141046**

Analyses Requested

Page 8 of 11

**Field Lab Use Only**

**Client Name:** Mosaic Pavers  
**Address:** 1395 135th Ave  
**City, State, Zip:** Muskegon, MI 49439  
**Phone:** 234-8332  
**Cell:** 234-8332  
**Email:** mosaic@mosaicpavers.com

**Project Name:** Acceleration Boring  
**Client Project No. (F010):** 29392

**Invoice To:** ☐ Client ☐ Other  
**Consent/Report To:** ☐ Client (continued)

**Field Sample ID:** 2104  
**Sample Date:** 6/8/12  
**Sample Time:** 8:00 AM

**Number of Containers Submitted:**

Container	Color	Quantity
1	PINK	3
2	LT GREEN	2
3	GREEN	1
4	WHITE	1
5	PINK	1
6	LT GREEN	1
7	GREEN	1
8	WHITE	1

**Disposal:** Recycle

**Signature:** [Signature]  
**Date:** 6/12/12

**Witness:** [Signature]  
**Date:** 6/12/12


**Analyses Requested:**

- ☐ A. MOISTURE
- ☐ B. AASD pH-2
- ☐ C. AASD pH-2
- ☐ D. 111 HCl pH-2
- ☐ E. HACH pH-12
- ☐ F. ZINCADPHAT pH-10
- ☐ G. Lead
- ☐ H. Copper (from leach)

**Sample Containers:**



## SAMPLE RECEIVING / LOG-IN CHECKLIST

 <b>TRIMATRIX</b> LABORATORIES		Order # <u>Mosaic Potash</u> Recorder Record Page/Log # <u>7-8</u>		Work Order # <u>5120207</u> Issue / Add To _____ Project/Change _____ Service/Bid _____	
Received by (Initials/Date): <u>La 6/13/12</u>		<input checked="" type="checkbox"/> Cooler <input type="checkbox"/> Box <input type="checkbox"/> Other: <u>1</u>		<input checked="" type="checkbox"/> IR Gun (#202) Thermistor Used <input type="checkbox"/> Digital Thermometer (454) <input type="checkbox"/> 2nd Additional Cooler Allocation Form	

Cooler #	Time	Cooler #	Time	Cooler #	Time	Cooler #	Time
2104	1013						

<b>Custody Seals</b> <input checked="" type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact	<b>Custody Seals</b> <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact	<b>Custody Seals</b> <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact	<b>Custody Seals</b> <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact
<b>Coilant Location</b> Dispersed / Top / Middle / Bottom	<b>Coilant Location</b> Dispersed / Top / Middle / Bottom	<b>Coilant Location</b> Dispersed / Top / Middle / Bottom	<b>Coilant Location</b> Dispersed / Top / Middle / Bottom
<b>Coilant Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input checked="" type="checkbox"/> None / Avg 2-3 containers	<b>Coilant Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers	<b>Coilant Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers	<b>Coilant Temperature Taken Via:</b> <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers
<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container	<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container	<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container	<b>Alternate Temperature Taken Via:</b> <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container
Recorded °C    Correction Factor °C    Actual °C Temp Blank TB location: Represenative / Not Representative 1 <u>28.1</u> <u>28.1</u> 2 <u>28.4</u> <u>28.4</u> 3 <u>28.5</u> <u>28.5</u> Average °C <u>28.3</u>	Recorded °C    Correction Factor °C    Actual °C Temp Blank TB location: Represenative / Not Representative 1 2 3 Average °C	Recorded °C    Correction Factor °C    Actual °C Temp Blank TB location: Represenative / Not Representative 1 2 3 Average °C	Recorded °C    Correction Factor °C    Actual °C Temp Blank TB location: Represenative / Not Representative 1 2 3 Average °C
<input type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?	<input type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?	<input type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?	<input type="checkbox"/> Cooler ID on COC? <input type="checkbox"/> VOC Trip Blank received?

**If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form**

<b>Paperwork Received</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <input checked="" type="checkbox"/> Chain of Custody recorded(s)? If No, initiated by _____ Received for Lab Signed/Date/Time? _____ <input type="checkbox"/> Shipping document? <input type="checkbox"/> Other: _____ <b>COC Information</b> Filled COC <input checked="" type="checkbox"/> Other: _____ COC ID Number: <u>141046</u>	<b>Check Sample Preservation</b> N/A Yes No <input checked="" type="checkbox"/> Average sample temperature < 6° C? <input checked="" type="checkbox"/> Was thermal preservation required? If "No", Protect Chemical Approval Inheld _____ <input type="checkbox"/> If "Yes" Completed Non-Con Cooler - Cont Inventory Form? <input type="checkbox"/> Completed Sample Preservation Verification Form? <input checked="" type="checkbox"/> Samples chemically preserved correctly? If "No", added orange tag? <input checked="" type="checkbox"/> Received pre-preserved VOC solids? <input type="checkbox"/> MeOH <input type="checkbox"/> Na <sub>2</sub> SO <sub>4</sub>
<b>Check COC for Accuracy</b> Yes No <input type="checkbox"/> Analysis Requested? <input checked="" type="checkbox"/> Sample ID matches COC? <input checked="" type="checkbox"/> Sample Date and Time matches COC? <input type="checkbox"/> Container type completed on COC? <input checked="" type="checkbox"/> All container types indicated are received?	<b>Check for Short-Hold-Time Prep/Analyses</b> <input type="checkbox"/> Bacteriological <input type="checkbox"/> Air Bags <input type="checkbox"/> EnCores / Methanol Pre-Preserved <input type="checkbox"/> Formaldehyde/Aldehyde <input checked="" type="checkbox"/> Green-tagged containers <input type="checkbox"/> Yellow/White-tagged 1L ampers (SV Prep Lab)
<b>Sample Condition Summary</b> N/A Yes No <input checked="" type="checkbox"/> Broken containers/lids? <input checked="" type="checkbox"/> Missing or incomplete labels? <input checked="" type="checkbox"/> Illegible information on labels? <input type="checkbox"/> Low volume received? <input type="checkbox"/> Inappropriate or non-Trimatrix containers received? <input type="checkbox"/> VOC vials / TOX containers have headspace? <input type="checkbox"/> Extra sample locations / containers not listed on COC?	<b>Notes</b> <input type="checkbox"/> Trip Blank received <input type="checkbox"/> Trip Blank not taken on COC Cooler Received (Date/Time): <u>6/13/12 0945</u> Paperwork Delivered (Date/Time): <u>6/13/12 1018</u> 51 Hour Total Met? <u>Yes</u> / No

Log In Forms - Receiving Log-In Checklist

Revision 3.4

Client: <u>Mosaic Potash</u>	Work Order #: <u>E-1206307</u>
Product Tag #: <u>9-8</u>	Project Chemist: <u>JWR</u>
Completed By: <u>LA 6/13/12</u>	

CDC ID # <u>141046</u>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripes					
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>	None	HNO <sub>3</sub>	HNO <sub>3</sub>					
Expected pH	>12	<2	<2	6-8	<2	<2					
CDC Line #1											
CDC Line #2											
CDC Line #3											
CDC Line #4											
CDC Line #5											
CDC Line #6											
CDC Line #7											
CDC Line #8											
CDC Line #9											
CDC Line #10											

Ph Strip Lot #	
<input checked="" type="checkbox"/>	HC133115
<input type="checkbox"/>	

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

CDC ID #				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5	4	13	3	6	15					
Tag Color	Lt. Blue	Blue	Brown	Green	Red	Red Stripes					
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>	None	HNO <sub>3</sub>	HNO <sub>3</sub>					
Expected pH	>12	<2	<2	~7	<2	<2					
CDC Line #1											
CDC Line #2											
CDC Line #3											
CDC Line #4											
CDC Line #5											
CDC Line #6											
CDC Line #7											
CDC Line #8											
CDC Line #9											
CDC Line #10											

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5 NaOH	
500	2.5
1000	5.0
Container Type 4 H <sub>2</sub> SO <sub>4</sub>	
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13 H <sub>2</sub> SO <sub>4</sub>	
500	2.5



11105aie Petash 9-8 11/13/12 11105aie Petash 9-8 11/13/12	11105aie Petash 9-8 11/13/12 11105aie Petash 9-8 11/13/12
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# 2019年10月



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

August 21, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

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Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for July 2012

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During the month of July, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 16 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 31 days this month.
- Cavity KCI 1060 was in operation for 24 days this month.
- Cavity KCI 2030 was in operation for 29 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 24 days this month.
- Cavity KCI 2062 was not in operation for this month.

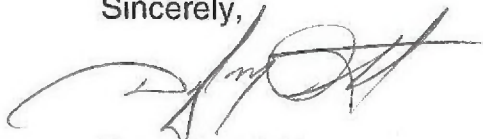
Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

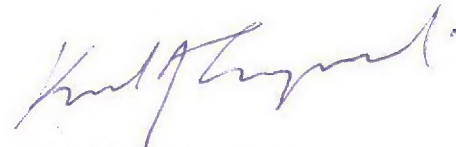
1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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CAVITY 1010 ✓

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in

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CAVITY 1020 ✓

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	1144	194	207
2-Jul-12	1103	214	246
3-Jul-12	1127	324	373
4-Jul-12	1145	340	359
5-Jul-12	1169	332	358
6-Jul-12	1120	331	370
7-Jul-12	1144	336	368
8-Jul-12	1152	338	377
9-Jul-12	1123	269	279
10-Jul-12	1150	217	229
11-Jul-12	1152	211	236
12-Jul-12	1137	86	203
13-Jul-12	1138	195	132
14-Jul-12	1116	219	213
15-Jul-12	1143	200	217
16-Jul-12	1180	66	73
17-Jul-12	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in

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Cavity 1020 ✓

Jul-12 ✓  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1140	242	265

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
16-Jul-12	1180 ✓	66

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
2-Jul-12	1103	214

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
4-Jul-12	340 ✓	1145

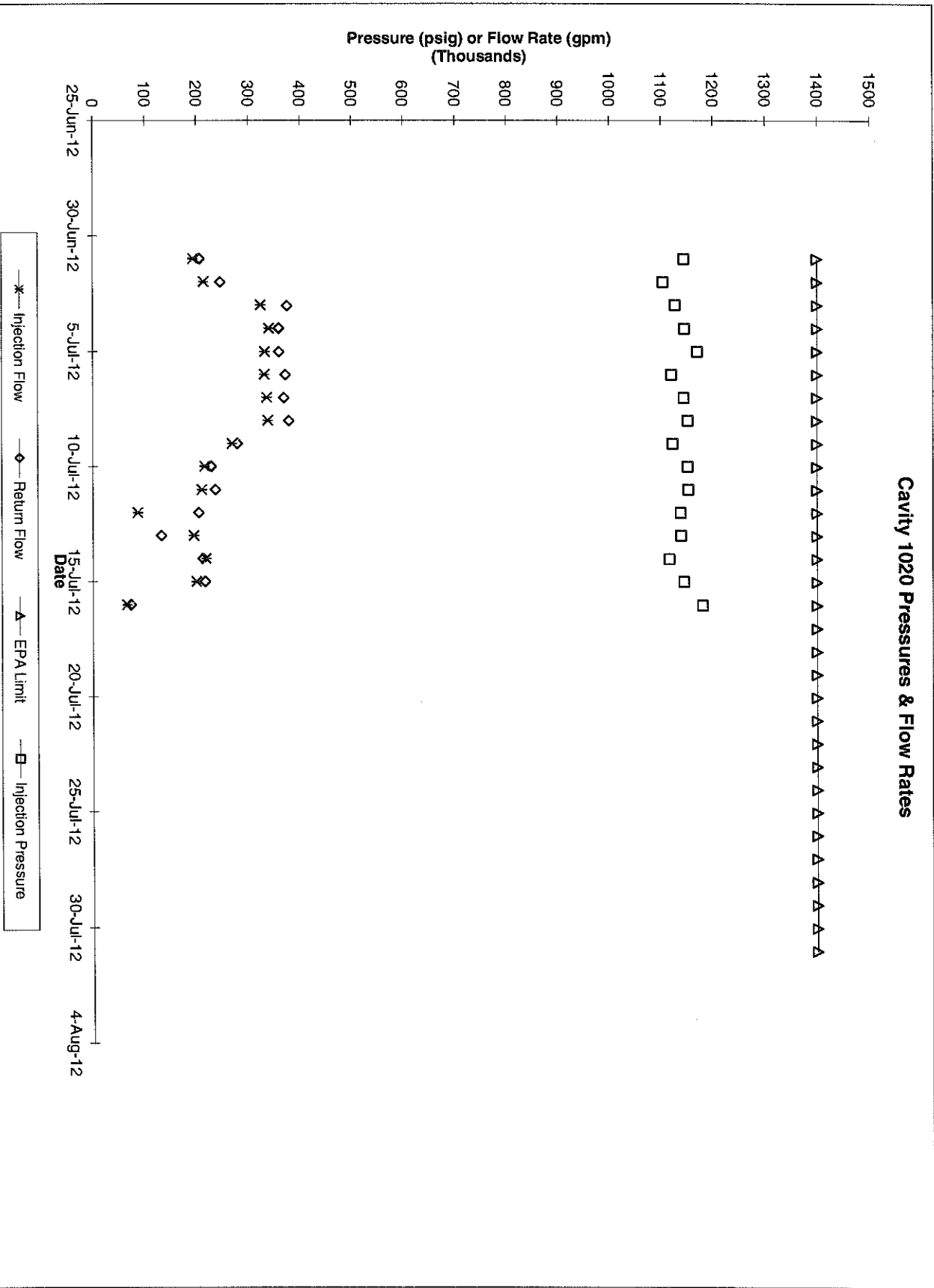
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



CAVITY 1040 ✓

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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in

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CAVITY 1050 ✓

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	1185	125	125
2-Jul-12	1150	176	176
3-Jul-12	1198	161	161
4-Jul-12	1200	146	146
5-Jul-12	1200	149	149
6-Jul-12	1175	150	150
7-Jul-12	1181	149	149
8-Jul-12	1206	154	154
9-Jul-12	1175	140	140
10-Jul-12	1188	133	133
11-Jul-12	1189	130	130
12-Jul-12	1180	114	114
13-Jul-12	1200	84	84
14-Jul-12	1188	161	161
15-Jul-12	1200	157	157
16-Jul-12	1207	152	152
17-Jul-12	1207	170	170
18-Jul-12	1160	189	189
19-Jul-12	1175	177	177
20-Jul-12	1178	165	165
21-Jul-12	1200	166	166
22-Jul-12	1200	151	151
23-Jul-12	1180	154	154
24-Jul-12	1183	151	151
25-Jul-12	1183	157	157
26-Jul-12	1188	199	199
27-Jul-12	1193	174	174
28-Jul-12	1195	175	175
29-Jul-12	1175	175	175
30-Jul-12	1195	162	162
31-Jul-12	1190	160	160

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Cavity 1050

Jul-12  
Monthly Averages

Injection Pressure (psi)  
1188

Injection Flow (gpm)  
155

Return Flow (gpm)  
155

Maximum Injection Pressure and corresponding Injection Flow

Date  
16-Jul-12

Injection Pressure (psi)  
1207

Injection Flow (gpm)  
152

Minimum Injection Pressure and corresponding Injection Flow

Date  
2-Jul-12

Injection Pressure (psi)  
1150

Injection Flow (gpm)  
176

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
26-Jul-12

Injection Flow (gpm)  
199

Injection Pressure (psi)  
1188

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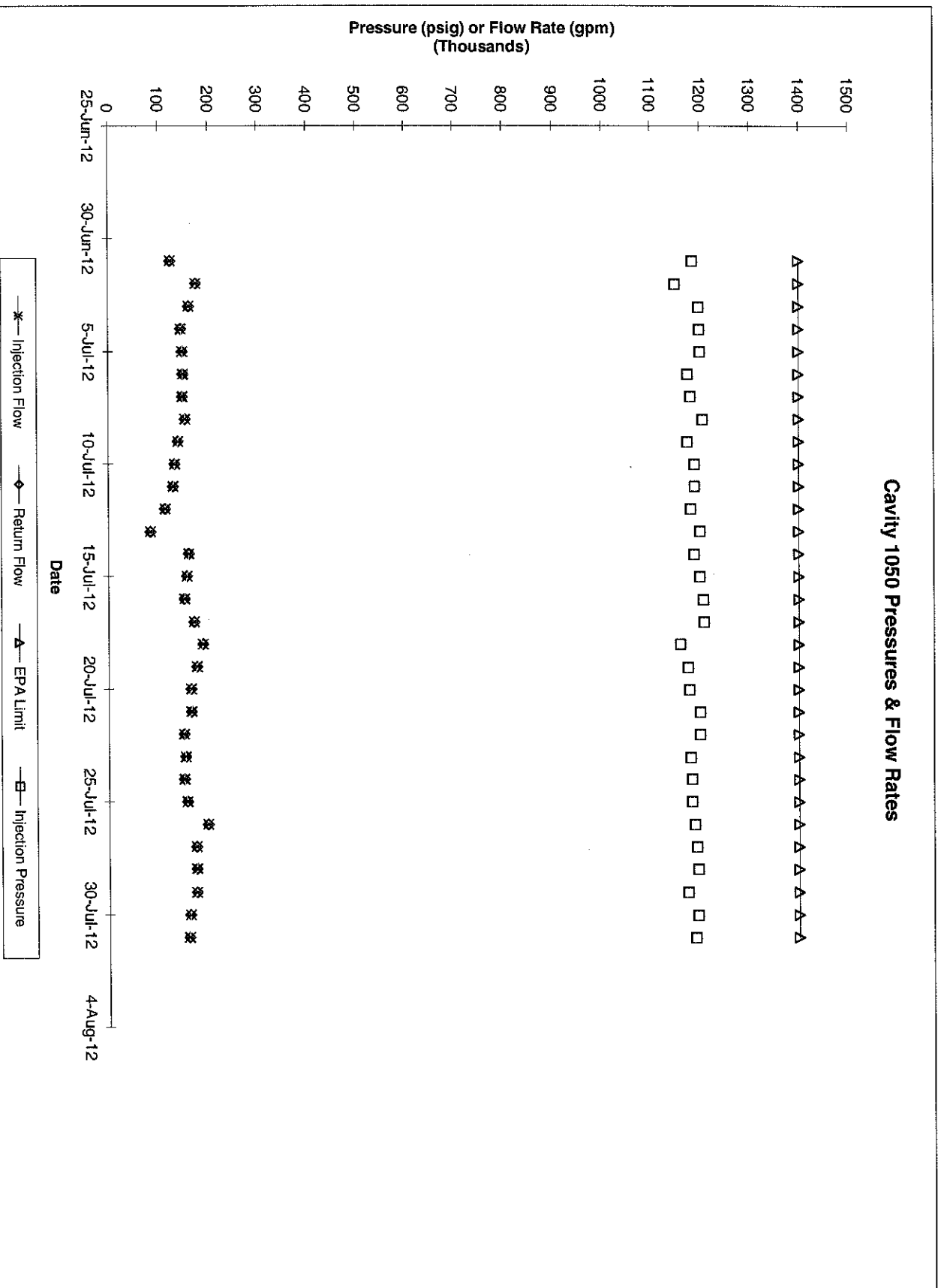
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# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



CAVITY 1060 ✓

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Cavity 1060 ✓

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	1144	215	211
2-Jul-12	1095	160	164
3-Jul-12	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in
10-Jul-12	1149	139	147
11-Jul-12	1150	153	136
12-Jul-12	1137	229	212
13-Jul-12	1138	132	161
14-Jul-12	1113	153	146
15-Jul-12	1143	201	207
16-Jul-12	1147	229	242
17-Jul-12	1135	271	302
18-Jul-12	1094	285	287
19-Jul-12	1108	271	298
20-Jul-12	1128	278	290
21-Jul-12	1137	278	323
22-Jul-12	1107	285	306
23-Jul-12	1064	340	344
24-Jul-12	1069	333	335
25-Jul-12	1121	333	346
26-Jul-12	1120	319	302
27-Jul-12	1127	319	333
28-Jul-12	✓ 1155	340	339
29-Jul-12	1151	313	332
30-Jul-12	1152	340	339
31-Jul-12	1139	✓ 340	348

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Cavity 1060

Jul-12  
Monthly Averages

Injection Pressure  
1126

Injection Flow  
261

Return Flow  
269

Maximum Injection Pressure and corresponding Injection Flow

Date  
28-Jul-12

Injection Pressure  
1155

Injection Flow  
340

Minimum Injection Pressure and corresponding Injection Flow

Date  
23-Jul-12

Injection Pressure  
1064

Injection Flow  
340

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
23-Jul-12

Injection Flow  
340

Injection Pressure  
1064

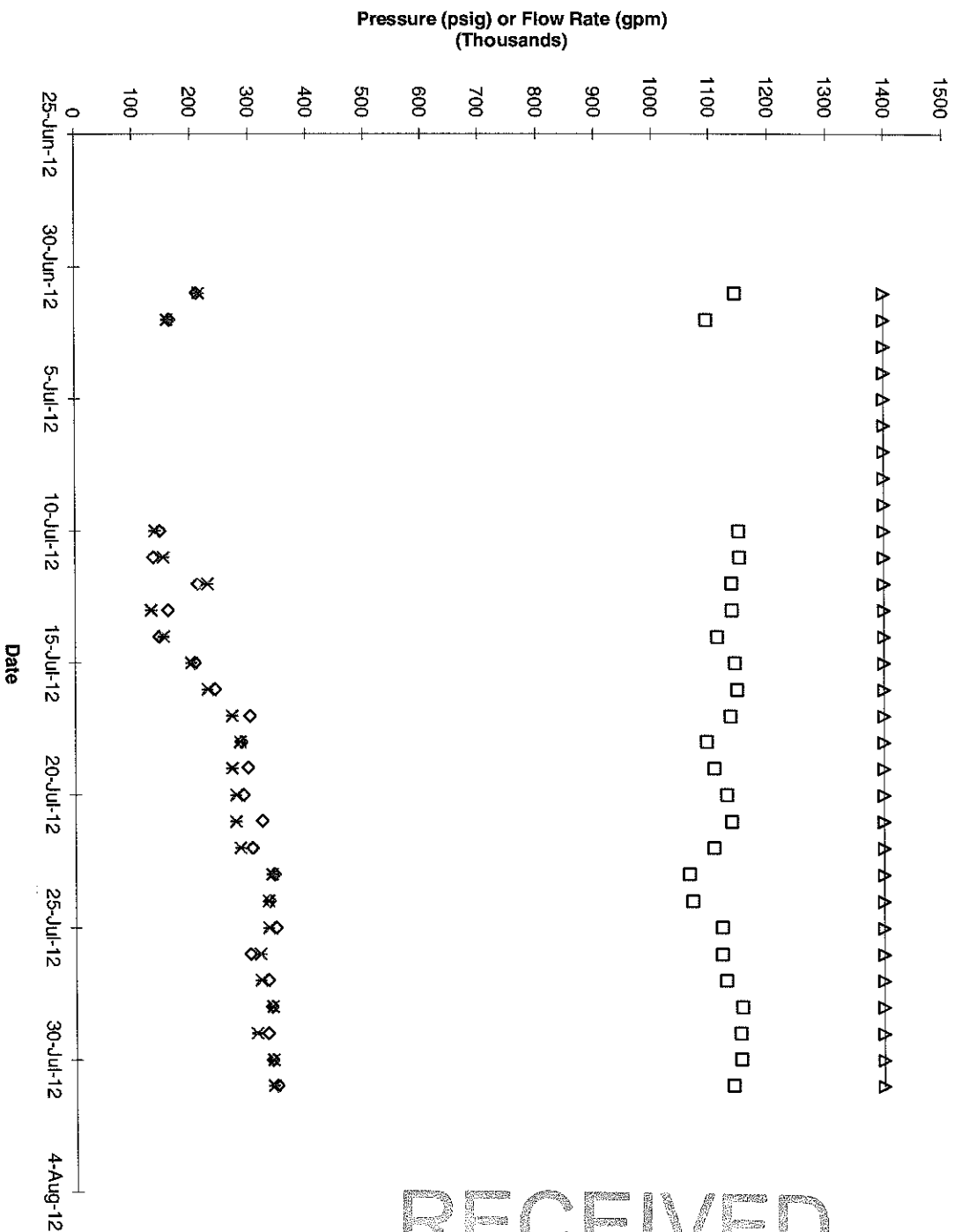
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# Solution Mining Permit MI-133-3G-A002

## Cavity 1060 Pressures & Flow Rates



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CAVITY 2030 ✓

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Cavity 2030

Daily Averages

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Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	1185	259	259
2-Jul-12	1150	192	192
3-Jul-12	1198	223	223
4-Jul-12	1200	208	208
5-Jul-12	1200	222	222
6-Jul-12	1175	215	215
7-Jul-12	1181	229	229
8-Jul-12	1206	222	222
9-Jul-12	1175	210	210
10-Jul-12	1188	219	219
11-Jul-12	1189	211	211
12-Jul-12	1180	238	238
13-Jul-12	1200	136	136
14-Jul-12	1188	211	211
15-Jul-12	1200	214	214
16-Jul-12	1207	200	200
17-Jul-12	1207	226	226
18-Jul-12	1160	256	256
19-Jul-12	1175	206	206
20-Jul-12	1170	133	133
21-Jul-12	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in
23-Jul-12	1180	265	265
24-Jul-12	1183	240	240
25-Jul-12	1183	259	259
26-Jul-12	1188	269	269
27-Jul-12	1193	255	255
28-Jul-12	1195	216	216
29-Jul-12	1175	251	251
30-Jul-12	1195	215	215
31-Jul-12	1190	252	252

Cavity 2030

Jul-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1187	222	222

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
16-Jul-12	1207	200

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
2-Jul-12	1150	192

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
26-Jul-12	269	1188

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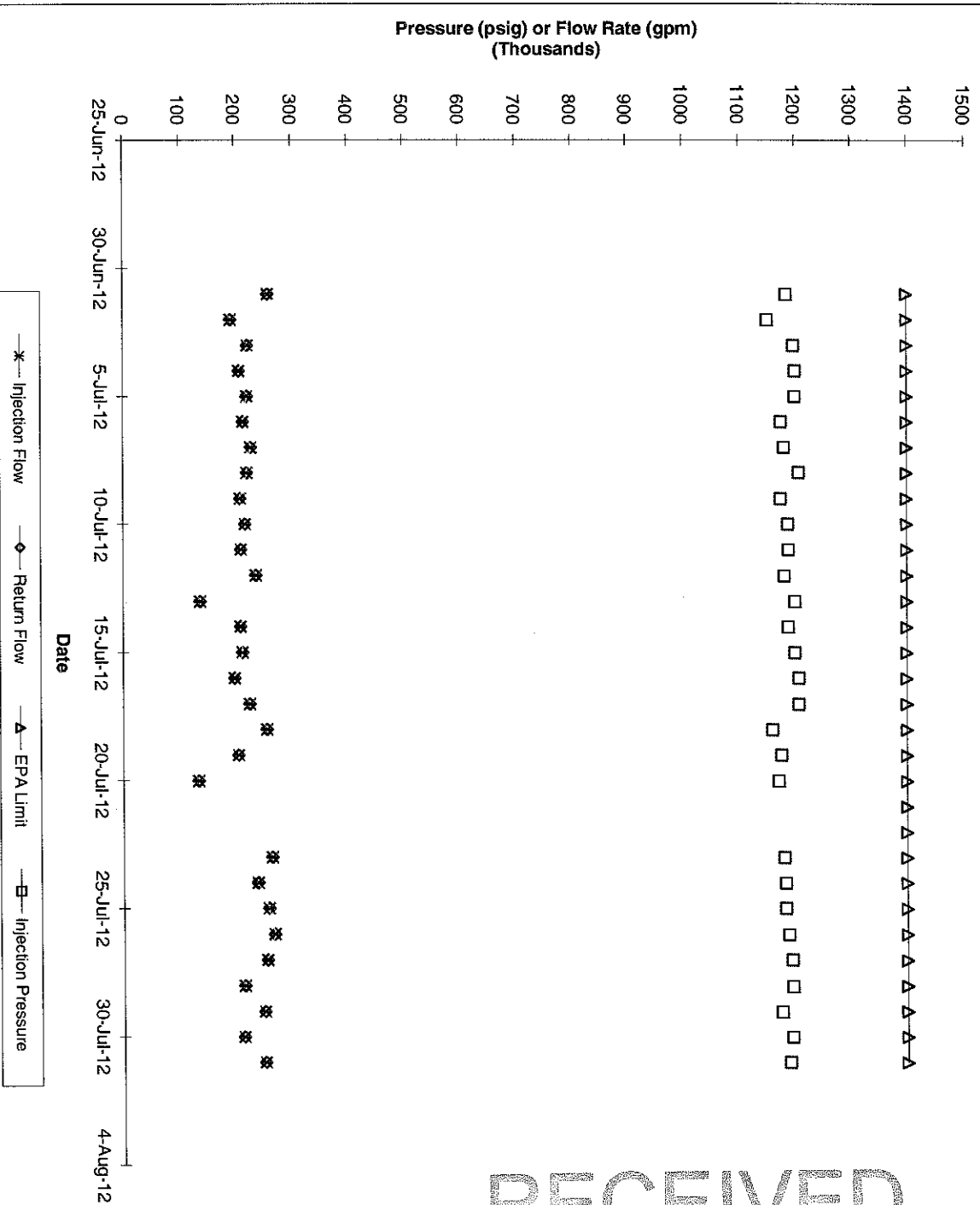
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



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CAVITY 2040 ✓

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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in

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CAVITY 2061 ✓

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EPA, REGION 5

Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	1185	108	108
2-Jul-12	1125	65	65
3-Jul-12	1220	100	100
4-Jul-12	1200	95	95
5-Jul-12	1200	97	97
6-Jul-12	1183	98	98
7-Jul-12	1181	79	79
8-Jul-12	1206	84	84
9-Jul-12	1175	86	86
10-Jul-12	1188	85	85
11-Jul-12	1189	99	99
12-Jul-12	1150	67	67
13-Jul-12	1200	56	56
14-Jul-12	1183	67	67
15-Jul-12	1200	56	56
16-Jul-12	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in
20-Jul-12	1200	49	49
21-Jul-12	1200	192	192
22-Jul-12	1200	172	172
23-Jul-12	shut in	shut in	shut in
24-Jul-12	1193	92	92
25-Jul-12	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in
27-Jul-12	1200	60	60
28-Jul-12	1195	96	96
29-Jul-12	1180	59	59
30-Jul-12	1200	106	106
31-Jul-12	1190	100	100

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Cavity 2061

Jul-12  
Monthly Averages

Injection Pressure (psi)  
1189

Injection Flow (gpm)  
90

Return Flow (gpm)  
90

Maximum Injection Pressure and corresponding Injection Flow

Date  
3-Jul-12

Injection Pressure (psi)  
1220

Injection Flow (gpm)  
100

Minimum Injection Pressure and corresponding Injection Flow

Date  
2-Jul-12

Injection Pressure (psi)  
1125

Injection Flow (gpm)  
65

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
21-Jul-12

Injection Flow (psi)  
192

Injection Pressure (psi)  
1200

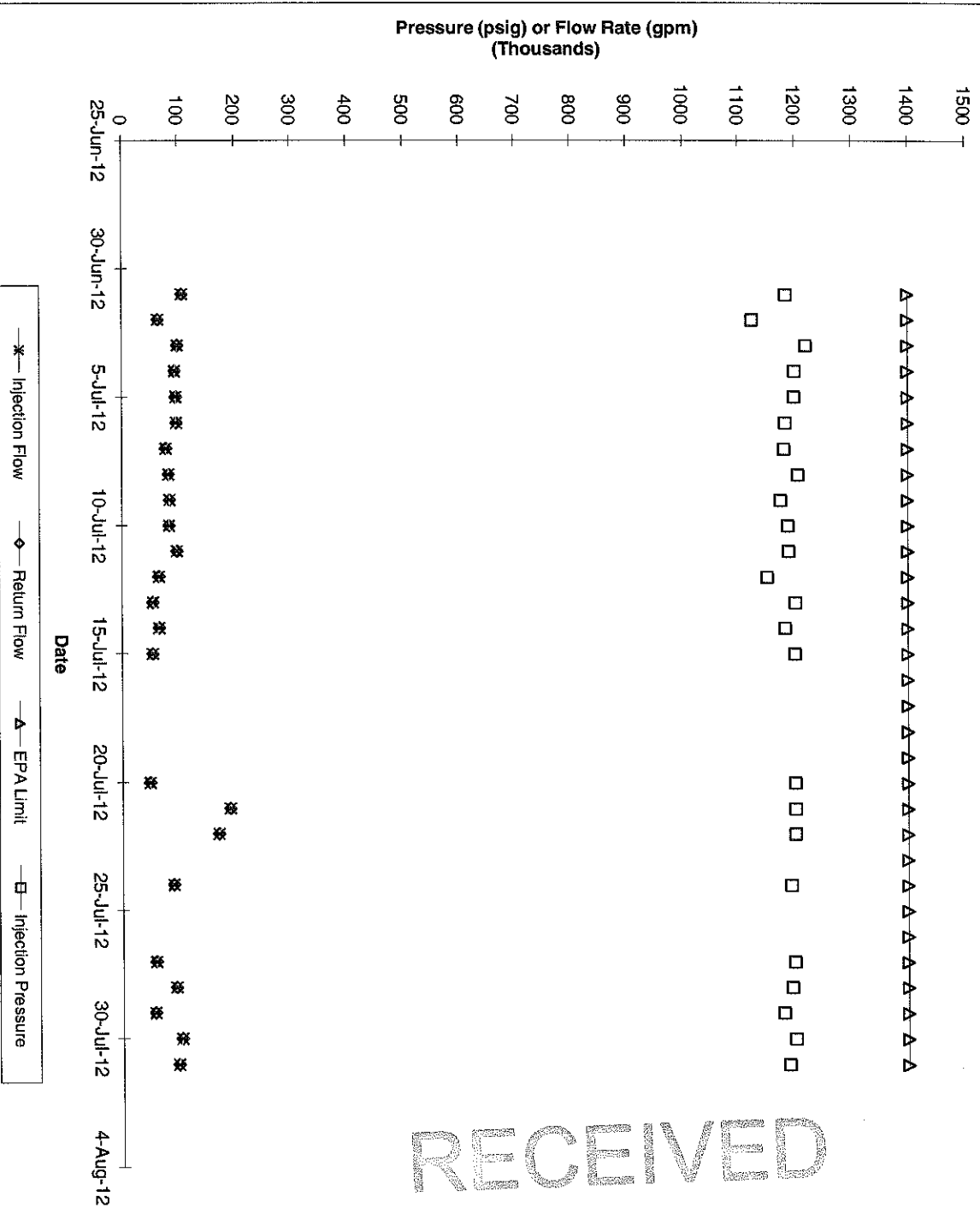
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# Solution Mining Permit MI-133-3G-A002

## Cavity 2061 Pressures & Flow Rates



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CAVITY 2062 ✓

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Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jul-12	shut in	shut in	shut in
2-Jul-12	shut in	shut in	shut in
3-Jul-12	shut in	shut in	shut in
4-Jul-12	shut in	shut in	shut in
5-Jul-12	shut in	shut in	shut in
6-Jul-12	shut in	shut in	shut in
7-Jul-12	shut in	shut in	shut in
8-Jul-12	shut in	shut in	shut in
9-Jul-12	shut in	shut in	shut in
10-Jul-12	shut in	shut in	shut in
11-Jul-12	shut in	shut in	shut in
12-Jul-12	shut in	shut in	shut in
13-Jul-12	shut in	shut in	shut in
14-Jul-12	shut in	shut in	shut in
15-Jul-12	shut in	shut in	shut in
16-Jul-12	shut in	shut in	shut in
17-Jul-12	shut in	shut in	shut in
18-Jul-12	shut in	shut in	shut in
19-Jul-12	shut in	shut in	shut in
20-Jul-12	shut in	shut in	shut in
21-Jul-12	shut in	shut in	shut in
22-Jul-12	shut in	shut in	shut in
23-Jul-12	shut in	shut in	shut in
24-Jul-12	shut in	shut in	shut in
25-Jul-12	shut in	shut in	shut in
26-Jul-12	shut in	shut in	shut in
27-Jul-12	shut in	shut in	shut in
28-Jul-12	shut in	shut in	shut in
29-Jul-12	shut in	shut in	shut in
30-Jul-12	shut in	shut in	shut in
31-Jul-12	shut in	shut in	shut in

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Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

June 11, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

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JUN 13 2012

Attn: Lisa Perenchio

UIC BRANCH  
EPA, REGION 5

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for May 2012

During the month of May, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 25 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 31 days this month.
- Cavity KCI 1060 was in operation for 7 days this month.
- Cavity KCI 2030 was in operation for 31 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 27 days this month.
- Cavity KCI 2062 was not in operation for this month.

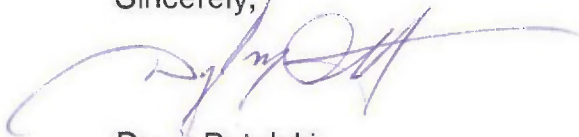
Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

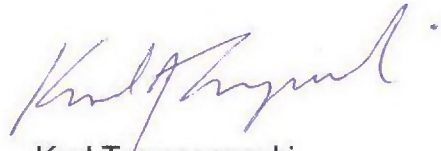
1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

CAVITY 1010 ✓

Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in
16-May-12	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in

CAVITY 1020

Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
✓ 1-May-12	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in
7-May-12	1035	220	220
8-May-12	1108	241	258
9-May-12	1109	230	257
10-May-12	1117	228	255
11-May-12	1134	220	236
12-May-12	1139	226	255
13-May-12	1108	245	274
14-May-12	1109	249	275
15-May-12	1083	240	266
16-May-12	1091	✓ 376	121
17-May-12	1135	119	407
18-May-12	1124	201	223
19-May-12	1127	248	269
20-May-12	1130	245	269
21-May-12	1130	234	255
22-May-12	1155	238	249
23-May-12	1147	228	266
24-May-12	1134	247	272
25-May-12	1162	279	320
26-May-12	1147	278	308
27-May-12	1128	296	299
28-May-12	1147	268	289
29-May-12	1146	266	292
30-May-12	1148	269	305
31-May-12	✓ 1178	305	334

Cavity 1020

May-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1127	248	271

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
31-May-12	1178	305

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
7-May-12	1035	220

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
16-May-12	376	1091

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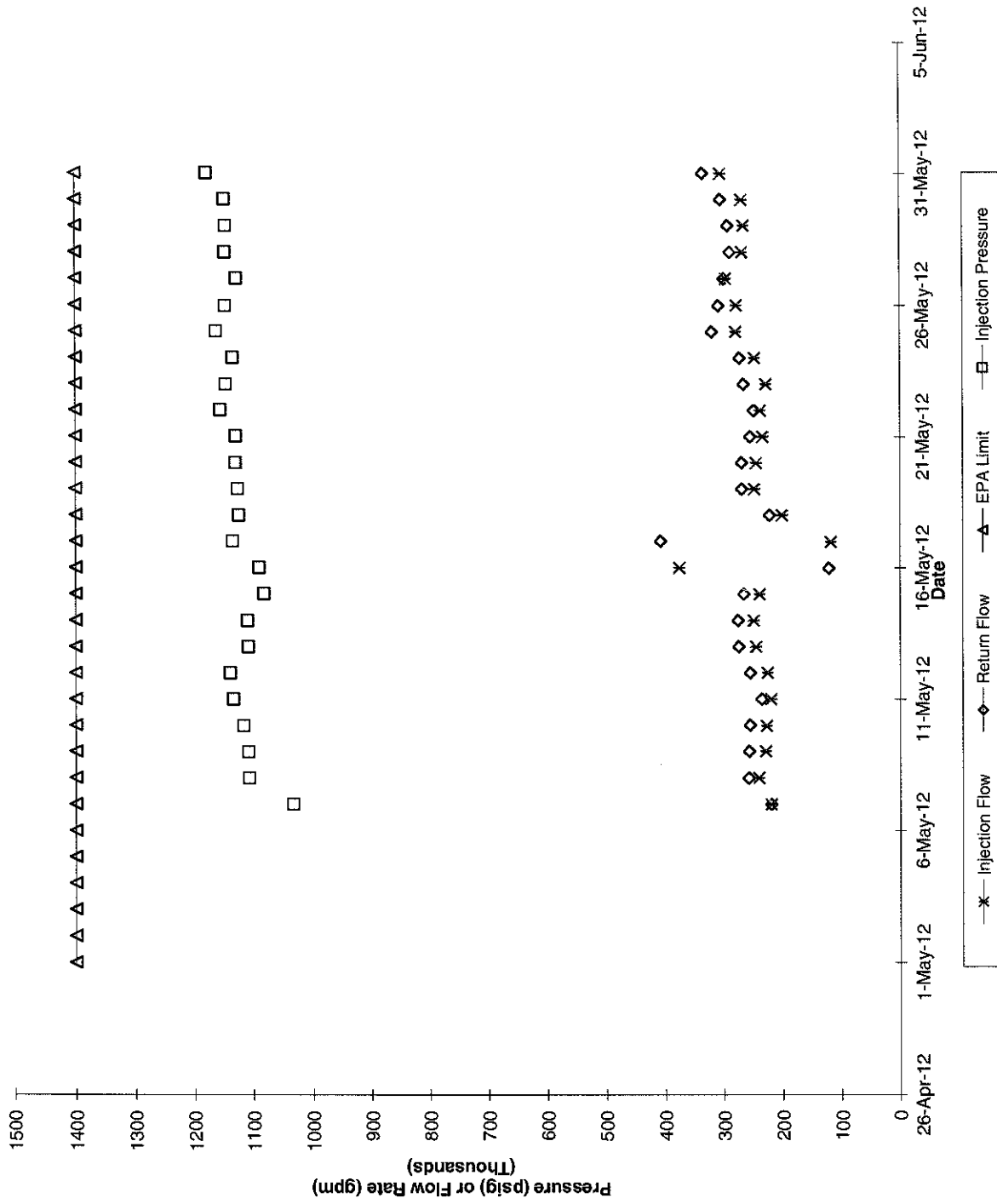
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



CAVITY 1040 ✓

Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in
16-May-12	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in

CAVITY 1050

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	1170	145	145
2-May-12	1206	179	179
3-May-12	1206	160	160
4-May-12	1188	157	157
5-May-12	1180	157	157
6-May-12	1175	144	144
7-May-12	1167	180	180
8-May-12	1183	206	206
9-May-12	1190	153	153
10-May-12	1117	142	142
11-May-12	1181	147	147
12-May-12	1184	166	166
13-May-12	1175	190	190
14-May-12	1250	165	165
15-May-12	1175	153	153
16-May-12	1150	144	144
17-May-12	1158	180	180
18-May-12	1167	142	142
19-May-12	1188	149	149
20-May-12	1163	133	133
21-May-12	1187	156	156
22-May-12	1205	142	142
23-May-12	1200	141	141
24-May-12	1200	155	155
25-May-12	1183	220	220
26-May-12	1160	198	198
27-May-12	1198	171	171
28-May-12	1188	142	142
29-May-12	1200	149	149
30-May-12	1199	158	158
31-May-12	1130	176	176

Cavity 1050 ✓

May-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1181	161	161

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
14-May-12	1250	165

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
10-May-12	1117	142

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
25-May-12	220	1183

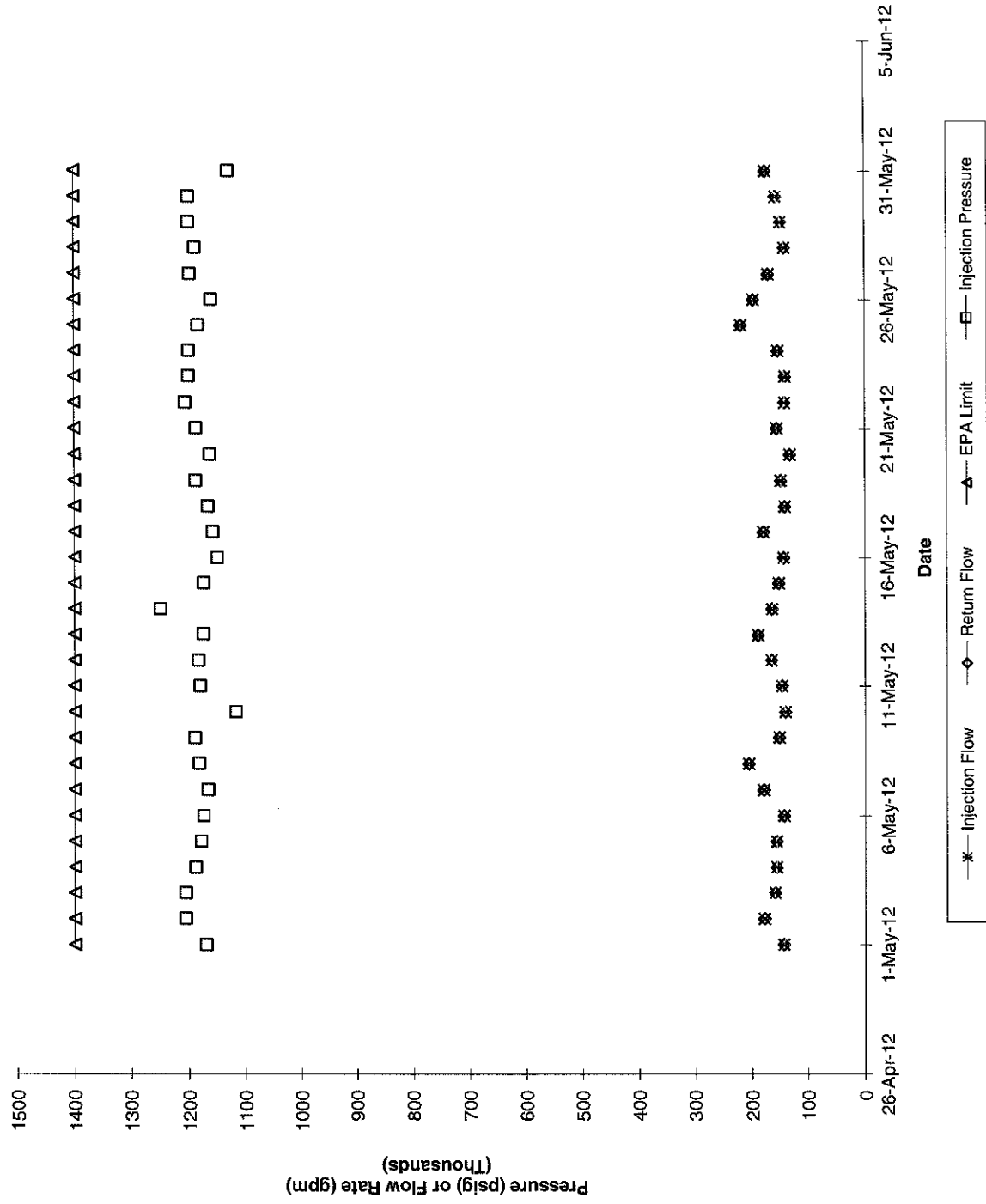
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# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



CAVITY 1060 ✓



Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	1139	340	349
2-May-12	1118	347	375
3-May-12	1144	347	350
4-May-12	1150	368	363
5-May-12	1142	355	366
6-May-12	1129	347	370
7-May-12	1030	111	122
8-May-12	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in
16-May-12	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in

Cavity 1060

May-12  
Monthly Averages

Injection Pressure  
1122

Injection Flow  
316

Return Flow  
328

Maximum Injection Pressure and corresponding Injection Flow

Date  
4-May-12

Injection Pressure  
1150

Injection Flow  
368

Minimum Injection Pressure and corresponding Injection Flow

Date  
7-May-12

Injection Pressure  
1030

Injection Flow  
111

Maximum Injection Flow Rate and corresponding Injection Pressure

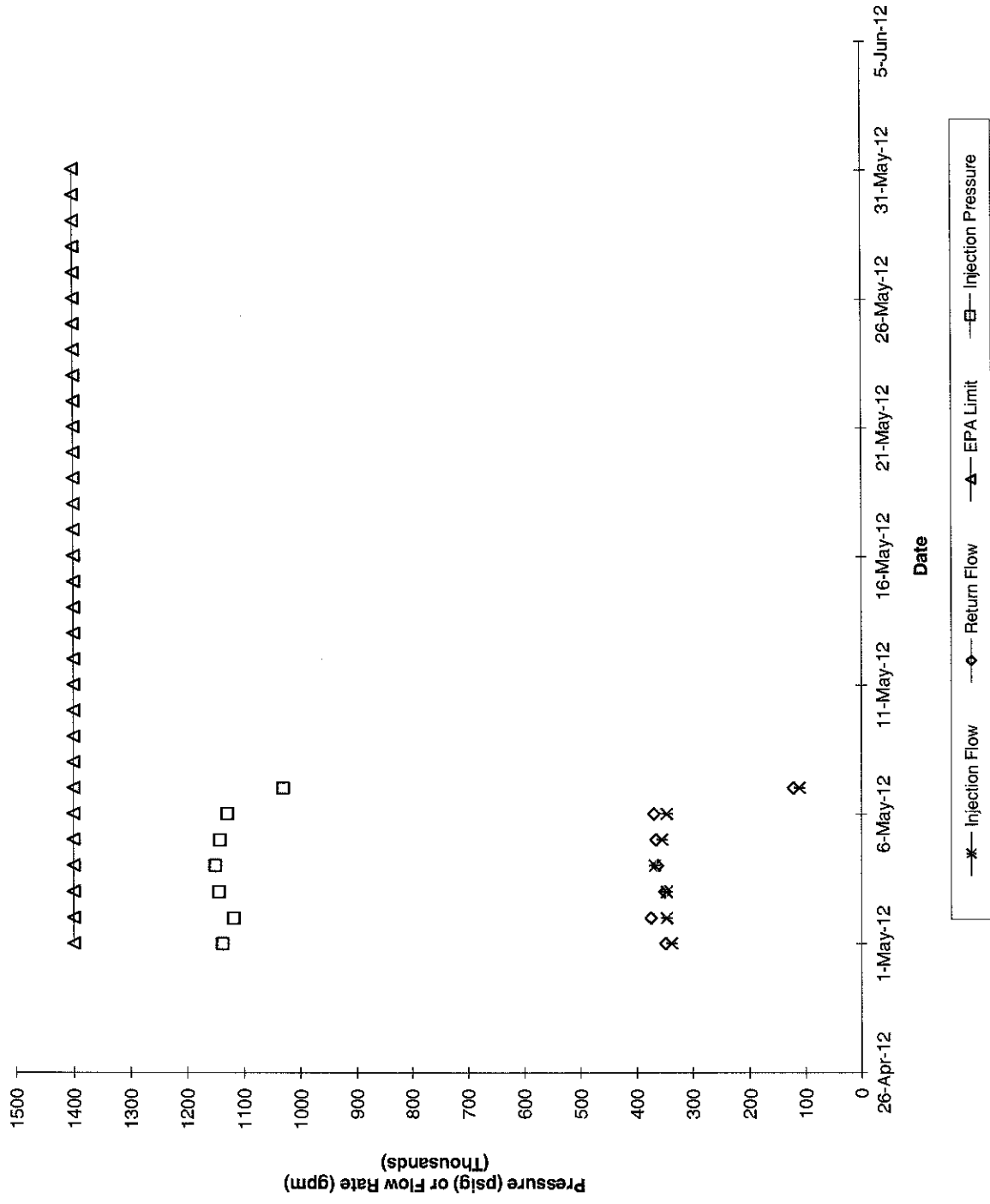
Date  
4-May-12

Injection Flow  
368

Injection Pressure  
1150

# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



CAVITY 2030 ✓

Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	1170	232	232
2-May-12	1208	172	172
3-May-12	1208	190	190
4-May-12	1188	226	226
5-May-12	1173	169	169
6-May-12	1175	225	225
7-May-12	1167	238	238
8-May-12	1183	244	244
9-May-12	1190	260	260
10-May-12	1117	247	247
11-May-12	1181	202	202
12-May-12	1184	228	228
13-May-12	1175	235	235
14-May-12	1250	238	238
15-May-12	1175	195	195
16-May-12	1150	220	220
17-May-12	1158	247	247
18-May-12	1167	211	211
19-May-12	1188	241	241
20-May-12	1163	240	240
21-May-12	1187	231	231
22-May-12	1205	254	254
23-May-12	1200	208	208
24-May-12	1200	229	229
25-May-12	1183	177	177
26-May-12	1160	235	235
27-May-12	1198	250	250
28-May-12	1188	215	215
29-May-12	1200	222	222
30-May-12	1199	257	257
31-May-12	1130	226	226

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Cavity 2030

May-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1181	225	225

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
14-May-12	1250	238

Minimum Injection Pressure and corresponding Injection Flow

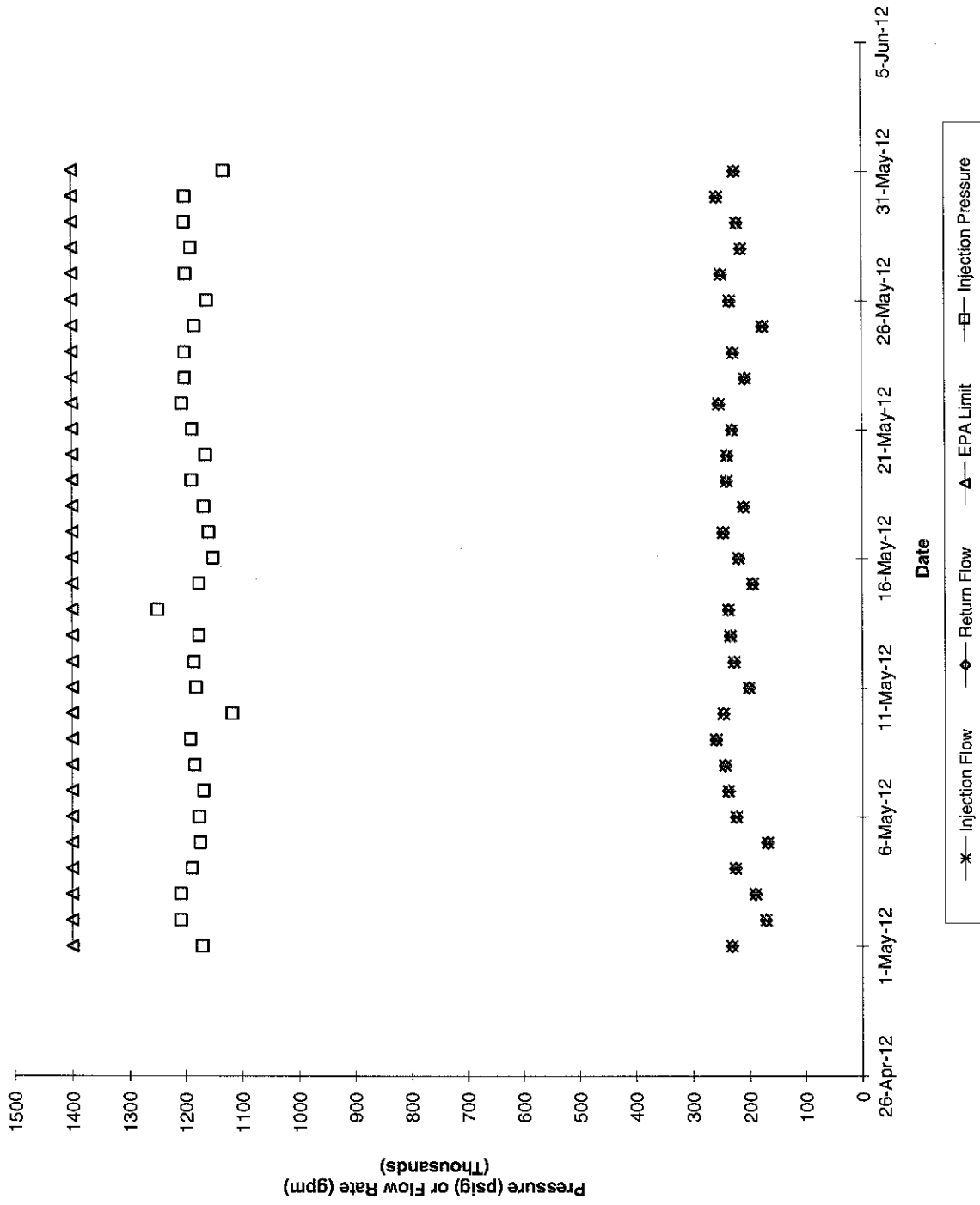
Date	Injection Pressure (psi)	Injection Flow (gpm)
10-May-12	1117	247

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
9-May-12	260	1190

# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



CAVITY 2040



Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in
16-May-12	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in

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CAVITY 2061

Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	shut in	shut in	shut in
2-May-12	1200	0	74
3-May-12	1208	69	69
4-May-12	1188	106	106
5-May-12	1180	111	111
6-May-12	1175	102	102
7-May-12	1167	137	137
8-May-12	1188	51	51
9-May-12	1150	72	72
10-May-12	1117	127	127
11-May-12	1181	161	161
12-May-12	1184	123	123
13-May-12	1175	92	92
14-May-12	1250	90	90
15-May-12	1175	88	88
16-May-12	1150	94	94
17-May-12	1158	81	81
18-May-12	1167	97	97
19-May-12	1188	111	111
20-May-12	1163	107	107
21-May-12	1187	103	103
22-May-12	1205	130	130
23-May-12	1200	98	98
24-May-12	1200	87	87
25-May-12	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in
28-May-12	1188	71	71
29-May-12	1200	61	61
30-May-12	1199	112	112
31-May-12	1130	145	145

Cavity 2061

May-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1180	97	100

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
14-May-12	1250	90

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
10-May-12	1117	127

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
11-May-12	161	1181

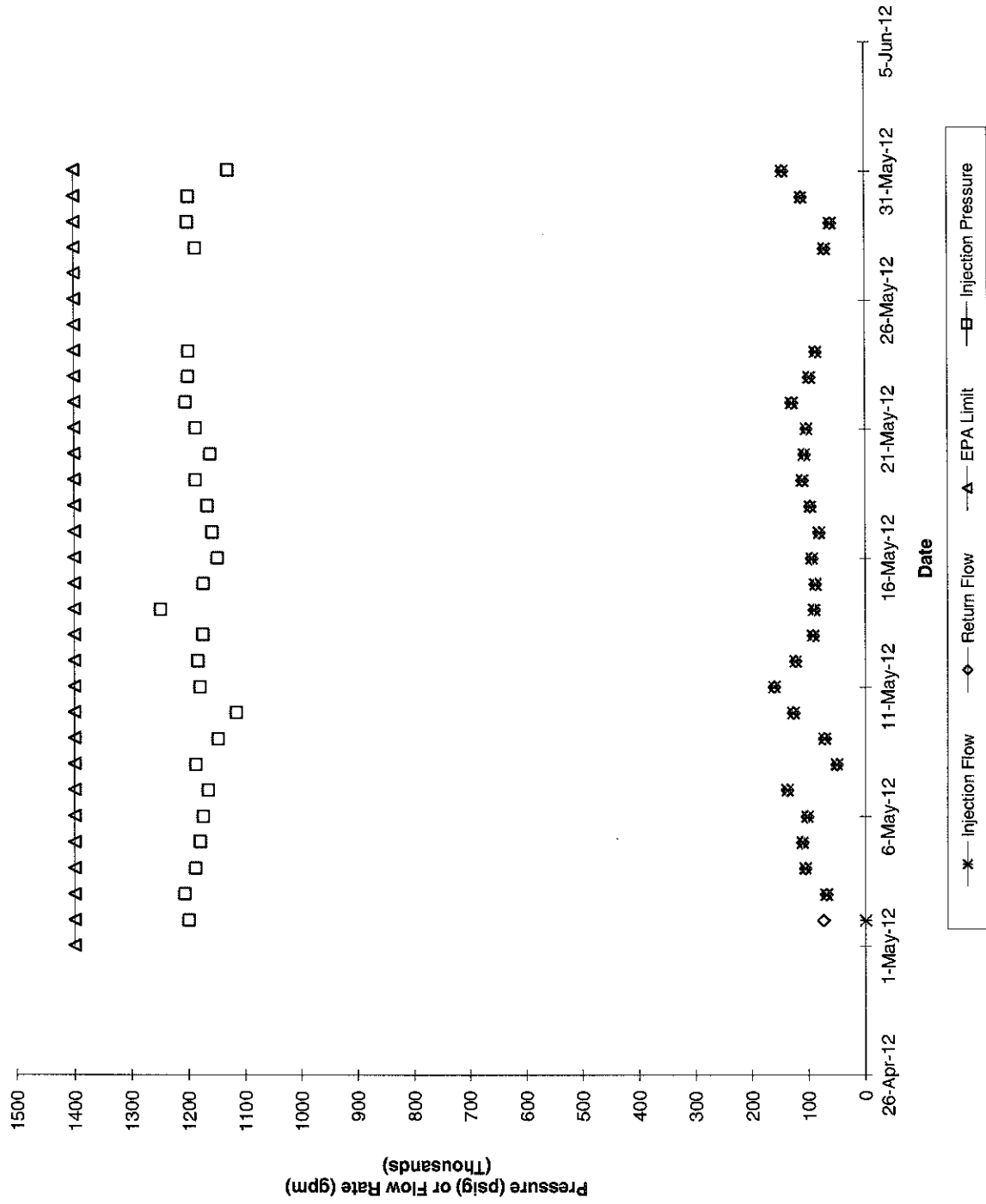
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# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



CAVITY 2062 ✓

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Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-May-12	shut in	shut in	shut in
2-May-12	shut in	shut in	shut in
3-May-12	shut in	shut in	shut in
4-May-12	shut in	shut in	shut in
5-May-12	shut in	shut in	shut in
6-May-12	shut in	shut in	shut in
7-May-12	shut in	shut in	shut in
8-May-12	shut in	shut in	shut in
9-May-12	shut in	shut in	shut in
10-May-12	shut in	shut in	shut in
11-May-12	shut in	shut in	shut in
12-May-12	shut in	shut in	shut in
13-May-12	shut in	shut in	shut in
14-May-12	shut in	shut in	shut in
15-May-12	shut in	shut in	shut in
16-May-12	shut in	shut in	shut in
17-May-12	shut in	shut in	shut in
18-May-12	shut in	shut in	shut in
19-May-12	shut in	shut in	shut in
20-May-12	shut in	shut in	shut in
21-May-12	shut in	shut in	shut in
22-May-12	shut in	shut in	shut in
23-May-12	shut in	shut in	shut in
24-May-12	shut in	shut in	shut in
25-May-12	shut in	shut in	shut in
26-May-12	shut in	shut in	shut in
27-May-12	shut in	shut in	shut in
28-May-12	shut in	shut in	shut in
29-May-12	shut in	shut in	shut in
30-May-12	shut in	shut in	shut in
31-May-12	shut in	shut in	shut in

May 10, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for April 2012

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During the month of April, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 9 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 30 days this month.
- Cavity KCI 1060 was in operation for 22 days this month.
- Cavity KCI 2030 was in operation for 30 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 28 days this month.
- Cavity KCI 2062 was not in operation for this month.

Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

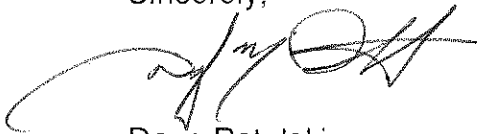


Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

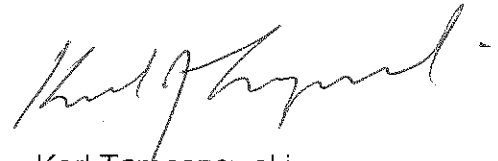
1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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CAVITY 1010 ✓

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Apr-12	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in

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CAVITY 1020 ✓

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Cavity 1020

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Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Apr-12	1097	251	255
2-Apr-12	1144	294	312
3-Apr-12	1126	308	310
4-Apr-12	1120	339	333
5-Apr-12	1140	79	81
6-Apr-12	1130	216	213
7-Apr-12	1153	331	314
8-Apr-12	1159	339	346
9-Apr-12	1150	80	74
10-Apr-12	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in

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Cavity 1020

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Apr-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1135	249	249

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
8-Apr-12	1159	339

Minimum Injection Pressure and corresponding Injection Flow

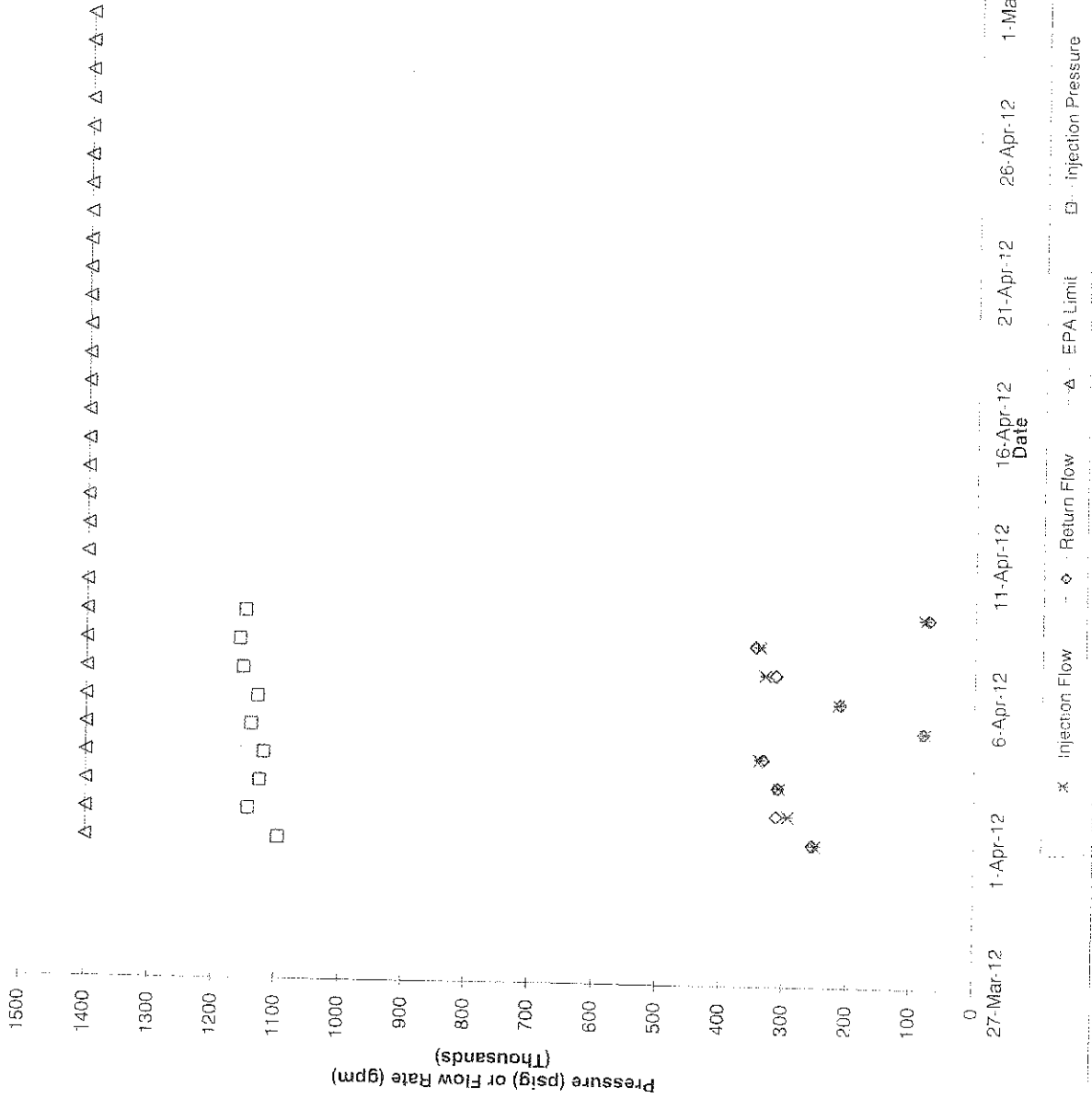
Date	Injection Pressure (psi)	Injection Flow (gpm)
1-Apr-12	1097	251

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
4-Apr-12	339	1120

# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



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CAVITY 1040 ✓



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Cavity 1040

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Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
✓ 1-Apr-12	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in

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CAVITY 1050

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Cavity 1050

UIC BRANCH  
EPA, REGION 5

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Apr-12	1216	139	139
2-Apr-12	1200	170	170
3-Apr-12	1188	193	193
4-Apr-12	1238	182	182
5-Apr-12	1200	90	90
6-Apr-12	1200	116	116
7-Apr-12	1188	130	130
8-Apr-12	1190	146	146
9-Apr-12	1164	147	147
10-Apr-12	1194	150	150
11-Apr-12	1113	145	145
12-Apr-12	1228	152	152
13-Apr-12	1180	71	71
14-Apr-12	1206	153	153
15-Apr-12	1206	205	205
16-Apr-12	1200	209	209
17-Apr-12	1167	205	205
18-Apr-12	1183	209	209
19-Apr-12	1192	208	208
20-Apr-12	1180	144	144
21-Apr-12	1220	112	112
22-Apr-12	1200	229	229
23-Apr-12	1206	216	216
24-Apr-12	1183	219	219
25-Apr-12	1195	159	159
26-Apr-12	1185	128	128
27-Apr-12	1163	180	180
28-Apr-12	1213	158	158
29-Apr-12	1150	144	144
30-Apr-12	1185	144	144

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## UIC BRANCH EPA, REGION 5

Cavity 1050

Apr-12  
Monthly Averages

Injection Pressure (psi)  
1191

Injection Flow (gpm)  
162

Return Flow (gpm)  
162

Maximum Injection Pressure and corresponding Injection Flow

Date  
4-Apr-12

Injection Pressure (psi)  
1238

Injection Flow (gpm)  
182

Minimum Injection Pressure and corresponding Injection Flow

Date  
11-Apr-12

Injection Pressure (psi)  
1113

Injection Flow (gpm)  
145

Maximum Injection Flow Rate and corresponding Injection Pressure

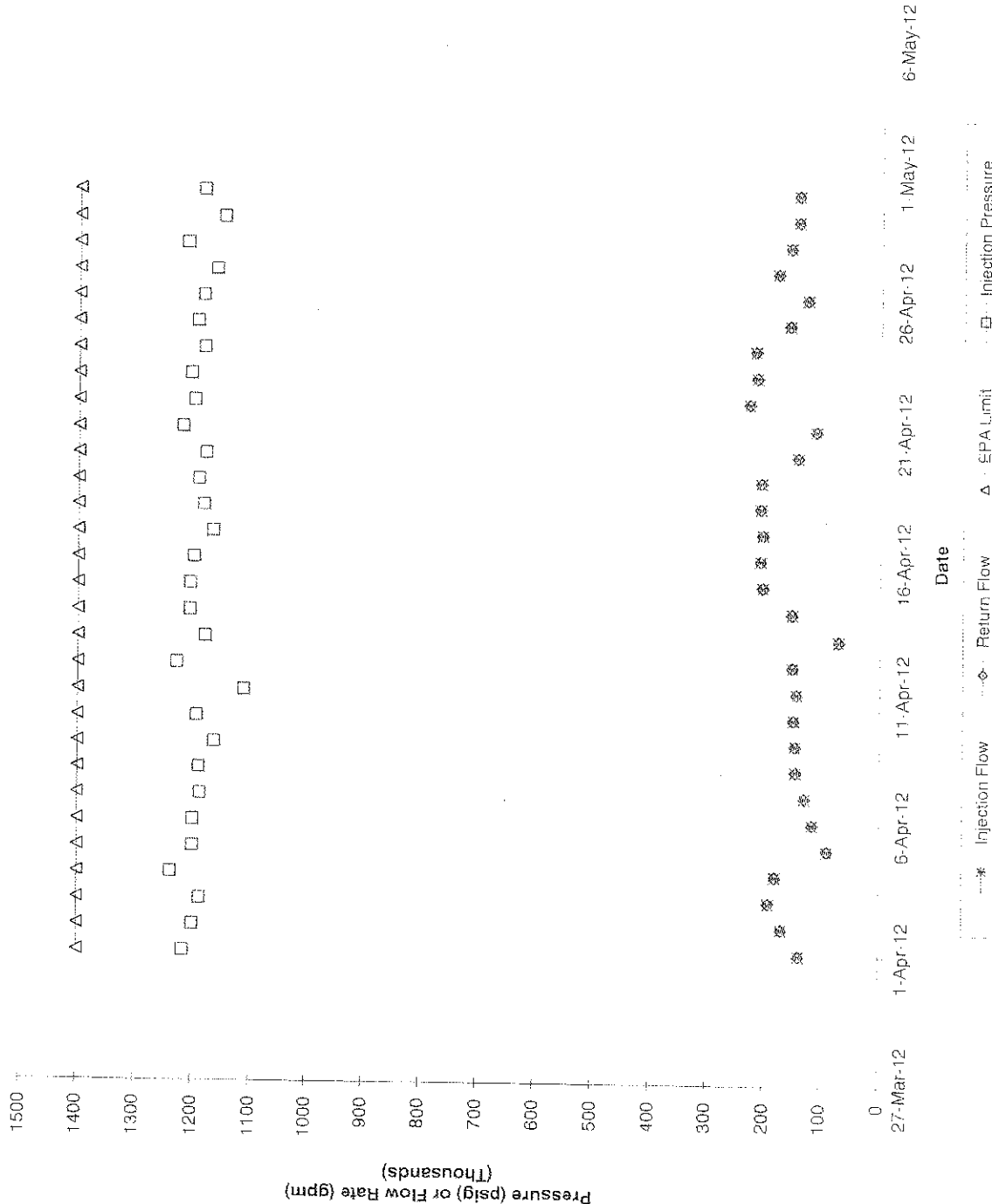
Date  
22-Apr-12

Injection Flow (gpm)  
229

Injection Pressure (psi)  
1200

# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



CAVITY 1060

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Cavity 1060

UIC BRANCH  
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Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
✓ 1-Apr-12	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in
9-Apr-12	1064	295	302
10-Apr-12	1068	292	280
11-Apr-12	1075	285	282
12-Apr-12	1092	285	314
13-Apr-12	1119	319	305
14-Apr-12	1173 ✓	333	355
15-Apr-12	1146	347	388
16-Apr-12	1141	375 ✓	394
17-Apr-12	1133	368	384
18-Apr-12	1135	368	380
19-Apr-12	1132	361	372
20-Apr-12	1130	299	291
21-Apr-12	1167	299	292
22-Apr-12	1138	354	391
23-Apr-12	1116	368	393
24-Apr-12	1110	375	391
25-Apr-12	1091	361	374
26-Apr-12	1125	375	383
27-Apr-12	1065	354	360
28-Apr-12	1147	354	354
29-Apr-12	1156	361	368
30-Apr-12	1137	333	341

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UIC BRANCH  
EPA, REGION 5

Cavity 1060

Apr-12  
Monthly Averages

Injection Pressure  
1121

Injection Flow  
339

Return Flow  
350

Maximum Injection Pressure and corresponding Injection Flow

Date  
14-Apr-12

Injection Pressure  
1173

Injection Flow  
333

Minimum Injection Pressure and corresponding Injection Flow

Date  
9-Apr-12

Injection Pressure  
1064

Injection Flow  
295

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
16-Apr-12

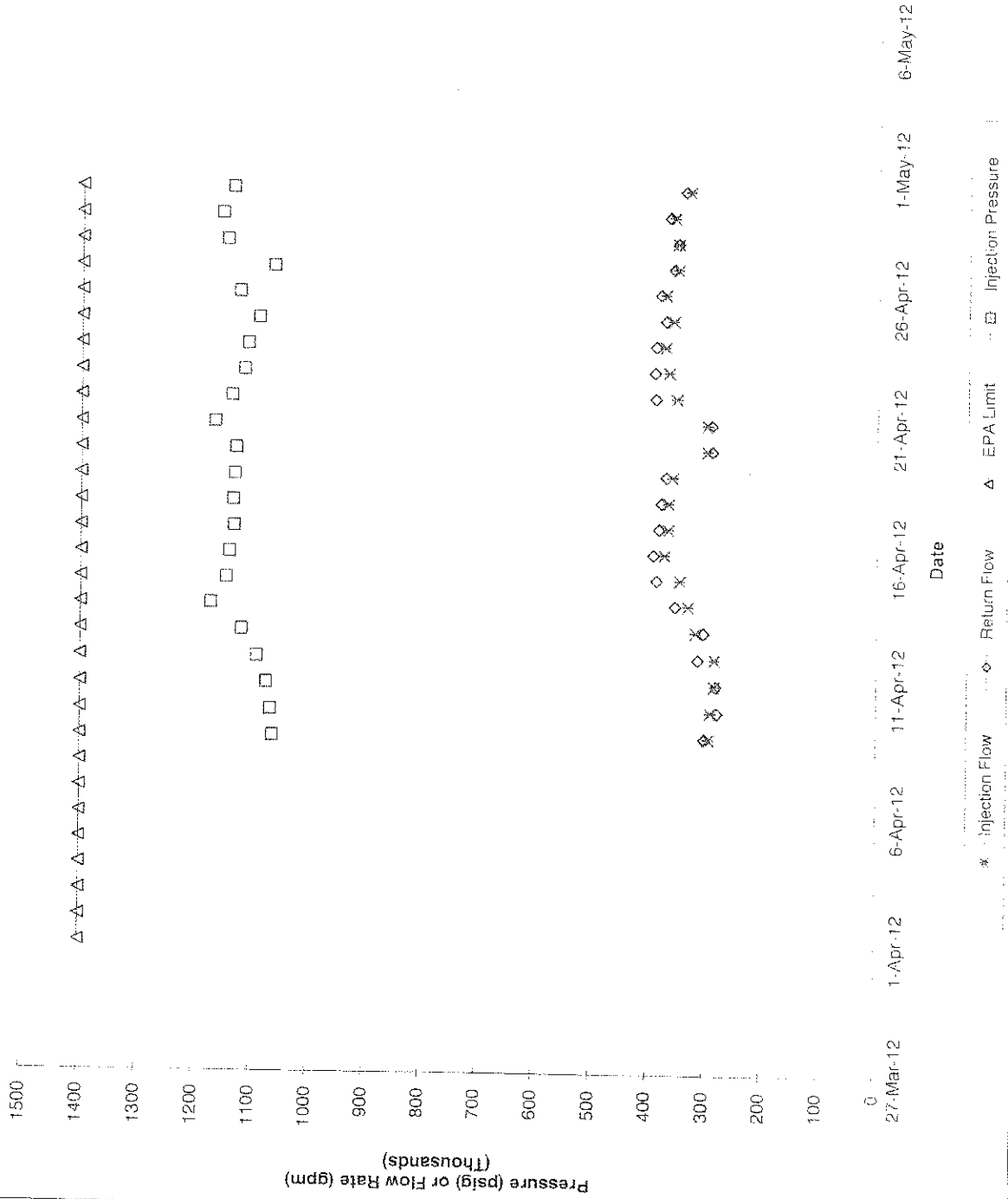
Injection Flow  
375

Injection Pressure  
1141



# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



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CAVITY 2030 ✓

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Cavity 2030

Daily Averages

UIC BRANCH  
EPA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Apr-12	1216	216	216
2-Apr-12	1200	241	241
3-Apr-12	1188	232	232
4-Apr-12	1238	203	203
5-Apr-12	1183	277	277
6-Apr-12	1183	308	308
7-Apr-12	1188	294	294
8-Apr-12	1190	292	292
9-Apr-12	1194	269	269
10-Apr-12	1194	259	259
11-Apr-12	1113	264	264
12-Apr-12	1228	286	286
13-Apr-12	1181	306	306
14-Apr-12	1206	318	318
15-Apr-12	1206	249	249
16-Apr-12	1200	265	265
17-Apr-12	1167	272	272
18-Apr-12	1183	288	288
19-Apr-12	1192	236	236
20-Apr-12	1180	241	241
21-Apr-12	1207	234	234
22-Apr-12	1200	293	293
23-Apr-12	1206	268	268
24-Apr-12	1183	151	151
25-Apr-12	1195	280	280
26-Apr-12	1185	248	248
27-Apr-12	1163	271	271
28-Apr-12	1213	194	194
29-Apr-12	1150	219	219
30-Apr-12	1180	182	182

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EPA, REGION 5

Cavity 2030

Apr-12  
Monthly Averages

Injection Pressure (psi)  
1190

Injection Flow (gpm)  
255

Return Flow (gpm)  
255

Maximum Injection Pressure and corresponding Injection Flow

Date  
4-Apr-12

Injection Pressure (psi)  
1238

Injection Flow (gpm)  
203

Minimum Injection Pressure and corresponding Injection Flow

Date  
11-Apr-12

Injection Pressure (psi)  
1113

Injection Flow (gpm)  
264

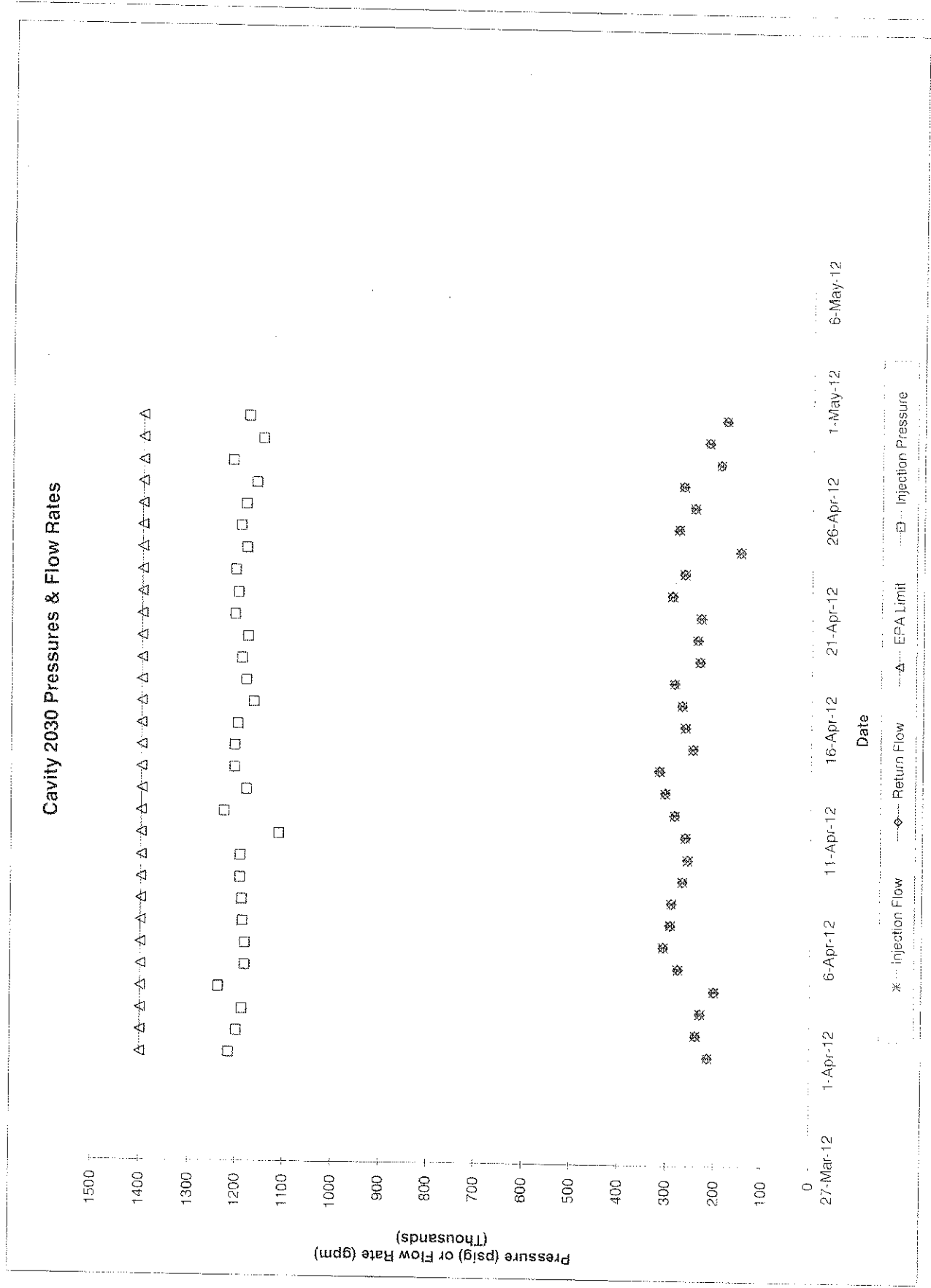
Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
14-Apr-12

Injection Flow (gpm)  
318

Injection Pressure (psi)  
1206

# Solution Mining Permit MI-133-3G-A002



CAVITY 2040 ✓

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Cavity 2040

UIC BRANCH  
EPA, REGION 5

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Apr-12	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in

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## Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Apr-12	1216	121	121
2-Apr-12	1200	60	60
3-Apr-12	1200	18	18
4-Apr-12	shut in	shut in	shut in
5-Apr-12	1175	193	193
6-Apr-12	1183	216	216
7-Apr-12	1188	98	98
8-Apr-12	1190	99	99
9-Apr-12	1194	125	125
10-Apr-12	1192	99	99
11-Apr-12	1113	116	116
12-Apr-12	1203	62	62
13-Apr-12	1168	51	51
14-Apr-12	shut in	shut in	shut in
15-Apr-12	1208	109	109
16-Apr-12	1200	121	121
17-Apr-12	1167	88	88
18-Apr-12	1183	79	79
19-Apr-12	1192	94	94
20-Apr-12	1180	72	72
21-Apr-12	1220	80	80
22-Apr-12	1200	94	94
23-Apr-12	1206	141	141
24-Apr-12	1183	155	155
25-Apr-12	1195	113	113
26-Apr-12	1185	84	84
27-Apr-12	1163	113	113
28-Apr-12	1213	103	103
29-Apr-12	1150	107	107
30-Apr-12	1180	57	57

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Cavity 2061

Apr-12  
Monthly Averages

Injection Pressure (psi)  
1187

Injection Flow (gpm)  
102

Return Flow (gpm)  
102

Maximum Injection Pressure and corresponding Injection Flow

Date  
21-Apr-12

Injection Pressure (psi)  
1220

Injection Flow (gpm)  
80

Minimum Injection Pressure and corresponding Injection Flow

Date  
11-Apr-12

Injection Pressure (psi)  
1113

Injection Flow (gpm)  
116

Maximum Injection Flow Rate and corresponding Injection Pressure

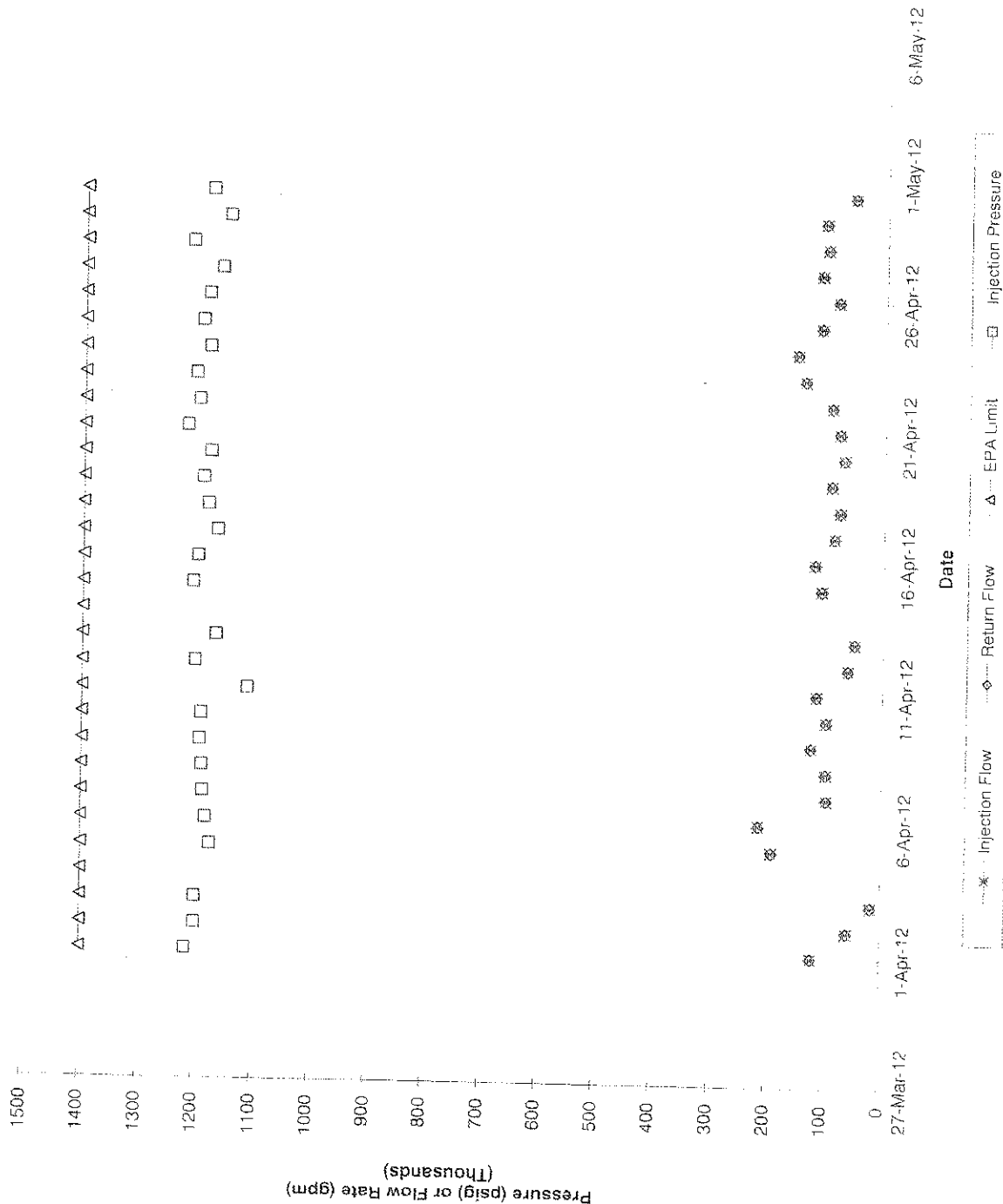
Date  
6-Apr-12

Injection Flow (psi)  
216

Injection Pressure (psi)  
1183

# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



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Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Apr-12	shut in	shut in	shut in
2-Apr-12	shut in	shut in	shut in
3-Apr-12	shut in	shut in	shut in
4-Apr-12	shut in	shut in	shut in
5-Apr-12	shut in	shut in	shut in
6-Apr-12	shut in	shut in	shut in
7-Apr-12	shut in	shut in	shut in
8-Apr-12	shut in	shut in	shut in
9-Apr-12	shut in	shut in	shut in
10-Apr-12	shut in	shut in	shut in
11-Apr-12	shut in	shut in	shut in
12-Apr-12	shut in	shut in	shut in
13-Apr-12	shut in	shut in	shut in
14-Apr-12	shut in	shut in	shut in
15-Apr-12	shut in	shut in	shut in
16-Apr-12	shut in	shut in	shut in
17-Apr-12	shut in	shut in	shut in
18-Apr-12	shut in	shut in	shut in
19-Apr-12	shut in	shut in	shut in
20-Apr-12	shut in	shut in	shut in
21-Apr-12	shut in	shut in	shut in
22-Apr-12	shut in	shut in	shut in
23-Apr-12	shut in	shut in	shut in
24-Apr-12	shut in	shut in	shut in
25-Apr-12	shut in	shut in	shut in
26-Apr-12	shut in	shut in	shut in
27-Apr-12	shut in	shut in	shut in
28-Apr-12	shut in	shut in	shut in
29-Apr-12	shut in	shut in	shut in
30-Apr-12	shut in	shut in	shut in
1-May-12	shut in	shut in	shut in



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

April 12, 2012

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United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

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Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for March 2012

During the month of March, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 10 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 29 days this month.
- Cavity KCI 1060 was in operation for 26 days this month.
- Cavity KCI 2030 was in operation for 29 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 28 days this month.
- Cavity KCI 2062 was not in operation for this month.

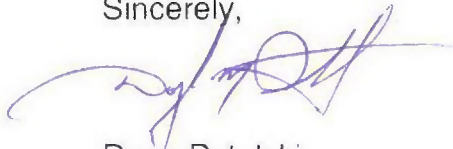
Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

CAVITY 1010

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	1141	374	361
2-Mar-12	1137	386	381
3-Mar-12	1148	382	375
4-Mar-12	1143	351	356
5-Mar-12	1169	327	295
6-Mar-12	1025	191	201
7-Mar-12	1040	204	202
8-Mar-12	1052	196	202
9-Mar-12	1086	181	176
10-Mar-12	1110	167	160
11-Mar-12	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in
30-Mar-12	1160	0	0
31-Mar-12	1139	215	224

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Cavity 1020

Mar-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1113	248	244

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
5-Mar-12	✓ 1169	327

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Mar-12	1025	191

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
2-Mar-12	✓ 386	1137

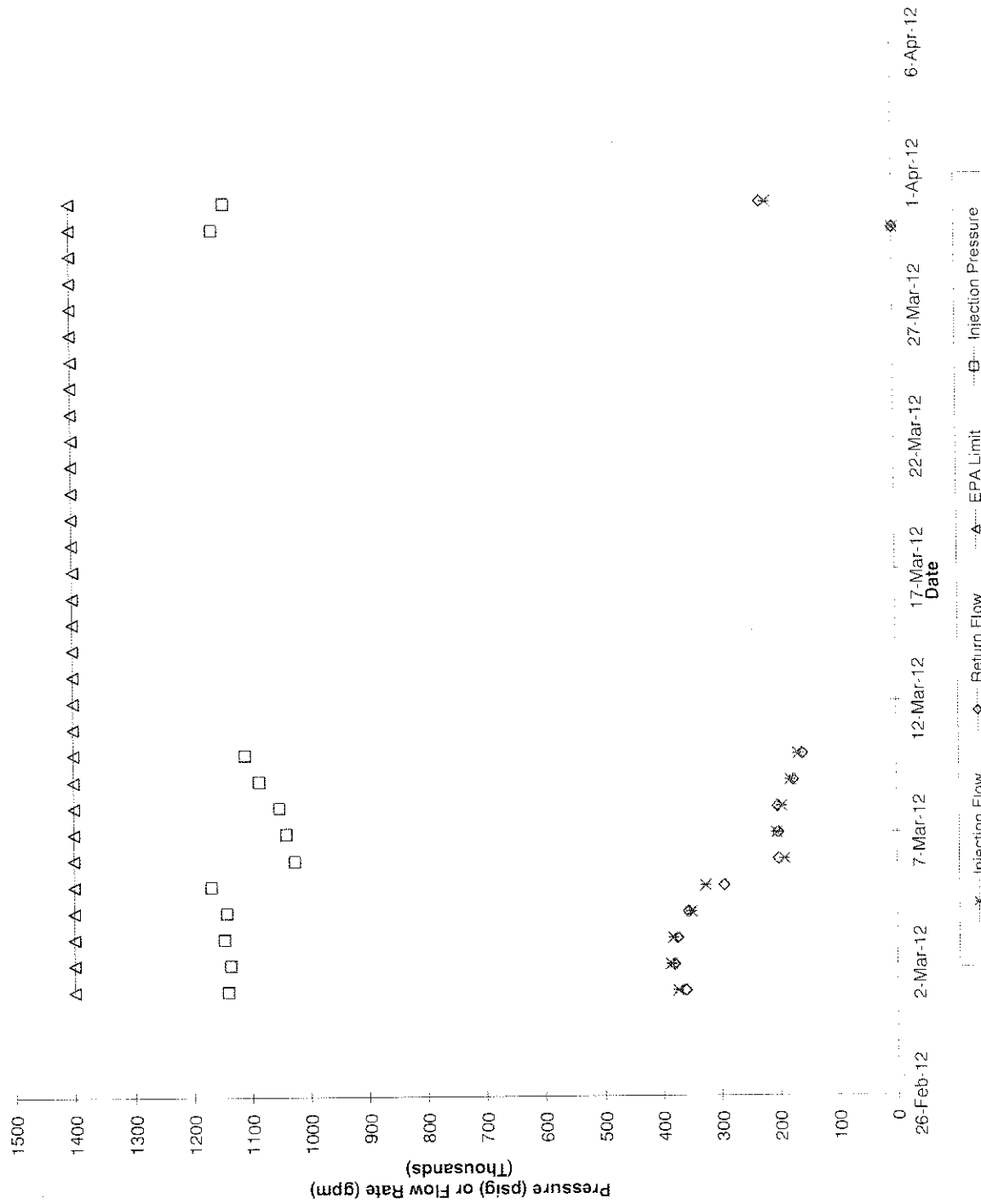
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Cavity 1020 Pressures & Flow Rates



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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	1178	187	187
2-Mar-12	1203	182	182
3-Mar-12	1200	191	191
4-Mar-12	1193	194	194
5-Mar-12	1187	176	176
6-Mar-12	1173	161	161
7-Mar-12	1210	179	179
8-Mar-12	1207	184	184
9-Mar-12	1200	166	166
10-Mar-12	1173	166	166
11-Mar-12	1187	210	210
12-Mar-12	1180	177	177
13-Mar-12	1176	181	181
14-Mar-12	1215	180	180
15-Mar-12	1183	181	181
16-Mar-12	1175	184	184
17-Mar-12	1210	175	175
18-Mar-12	1200	167	167
19-Mar-12	1168	157	157
20-Mar-12	1200	182	182
21-Mar-12	1200	181	181
22-Mar-12	1213	179	179
23-Mar-12	1200	188	188
24-Mar-12	1175	185	185
25-Mar-12	1180	61	61
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	1300	37	37
29-Mar-12	1200	58	58
30-Mar-12	1230	166	166
31-Mar-12	1204	145	145

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Cavity 1050

Mar-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1197	165	165

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
28-Mar-12	✓ 1300	37

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
19-Mar-12	1168	157

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
11-Mar-12	✓ 210	1187

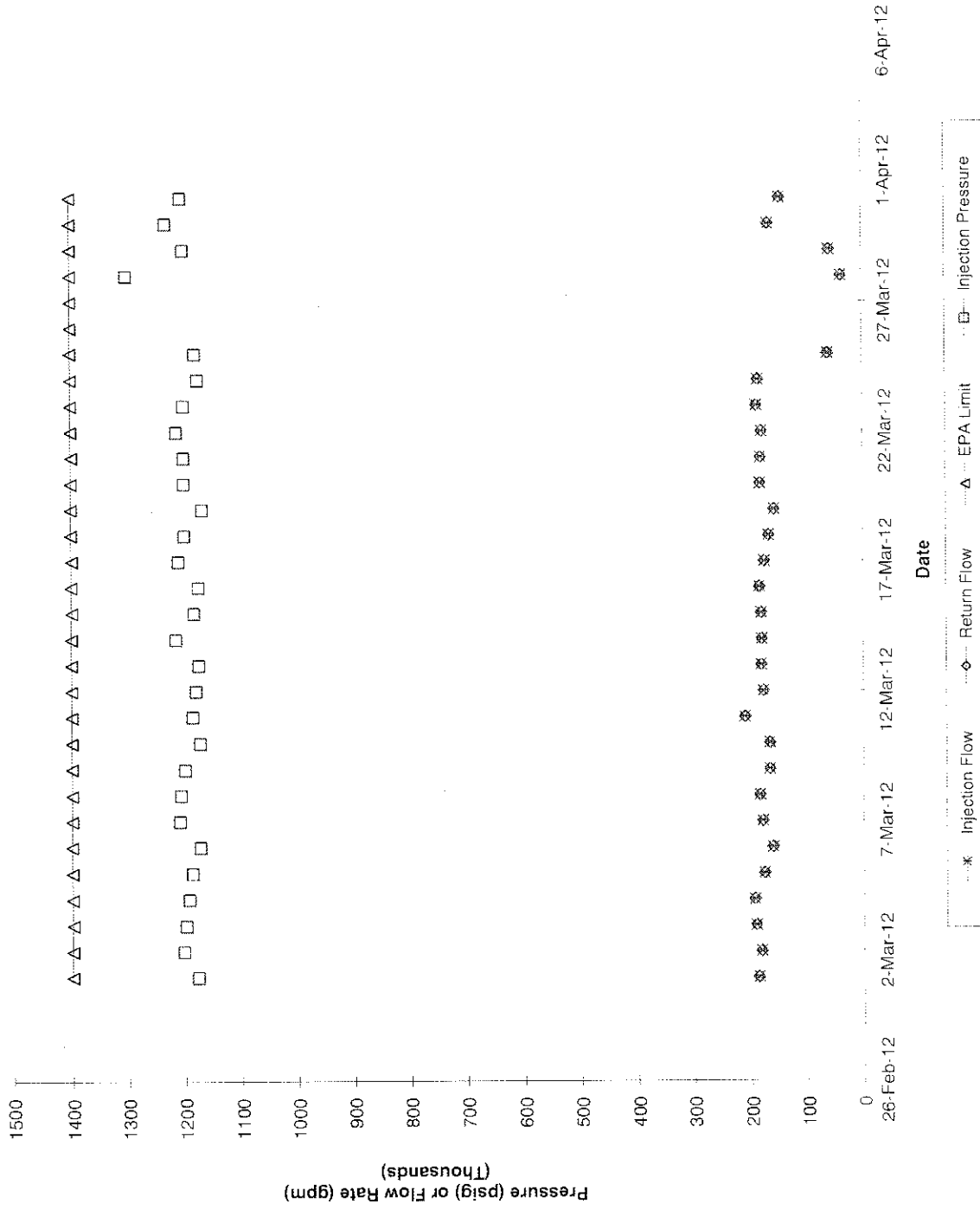
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Cavity 1050 Pressures & Flow Rates



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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in
6-Mar-12	1025	229	211
7-Mar-12	1040	215	208
8-Mar-12	1052	208	205
9-Mar-12	1086	208	195
10-Mar-12	1110	215	215
11-Mar-12	1099	264	289
12-Mar-12	1099	340	336
13-Mar-12	1150	354	363
14-Mar-12	1129	347	355
15-Mar-12	1133	347	357
16-Mar-12	1131	340	355
17-Mar-12	1143	340	356
18-Mar-12	1153	340	354
19-Mar-12	1145	354	347
20-Mar-12	1102	313	303
21-Mar-12	1112	326	324
22-Mar-12	940	313	308
23-Mar-12	1148	313	328
24-Mar-12	1153	313	320
25-Mar-12	1142	146	146
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	0	0	75
29-Mar-12	0	0	135
30-Mar-12	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in

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Cavity 1060

Mar-12  
Monthly Averages

Injection Pressure  
1004

Injection Flow  
265

Return Flow  
277

Maximum Injection Pressure and corresponding Injection Flow

Date  
18-Mar-12

Injection Pressure  
1153

Injection Flow  
340

Minimum Injection Pressure and corresponding Injection Flow

Date  
28-Mar-12

Injection Pressure  
0

Injection Flow  
0

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
13-Mar-12

Injection Flow  
354

Injection Pressure  
1150

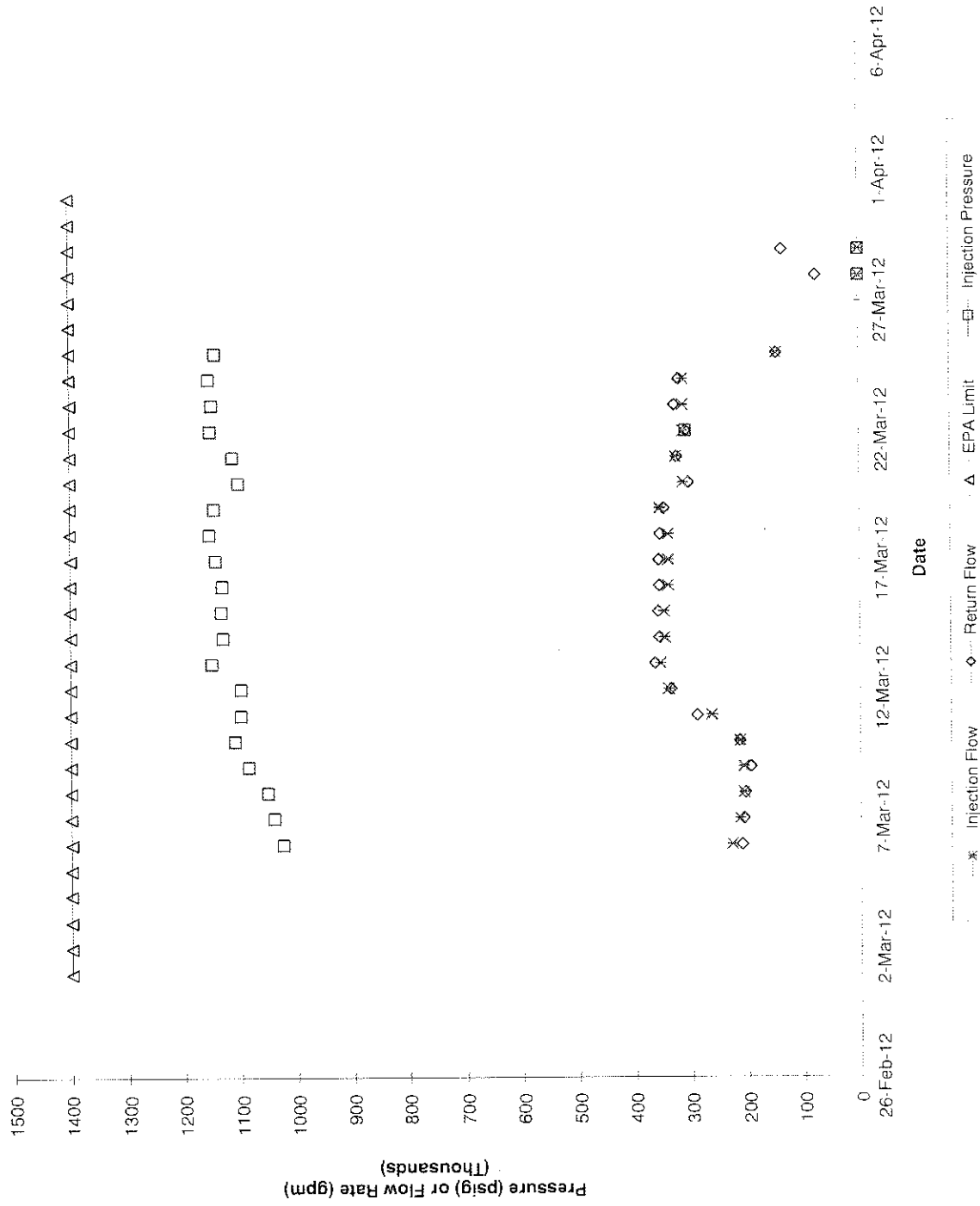
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# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



CAVITY 2030

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Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	1178	283	283
2-Mar-12	1203	280	280
3-Mar-12	1200	316	316
4-Mar-12	1193	266	266
5-Mar-12	1187	277	277
6-Mar-12	1173	304	304
7-Mar-12	1210	301	301
8-Mar-12	1207	293	293
9-Mar-12	1200	267	267
10-Mar-12	1173	281	281
11-Mar-12	1187	281	281
12-Mar-12	1180	295	295
13-Mar-12	1176	325	325
14-Mar-12	1215	268	268
15-Mar-12	1188	295	295
16-Mar-12	1175	272	272
17-Mar-12	1210	280	280
18-Mar-12	1200	286	286
19-Mar-12	1168	286	286
20-Mar-12	1200	318	318
21-Mar-12	1200	340	340
22-Mar-12	1213	208	208
23-Mar-12	1200	312	312
24-Mar-12	1175	361	361
25-Mar-12	1180	181	181
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	1300	46	46
29-Mar-12	1200	81	81
30-Mar-12	1230	327	327
31-Mar-12	1204	231	231

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Cavity 2030

Mar-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1197	271	271

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
28-Mar-12	1300	46

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
19-Mar-12	1168	286

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
24-Mar-12	361	1175

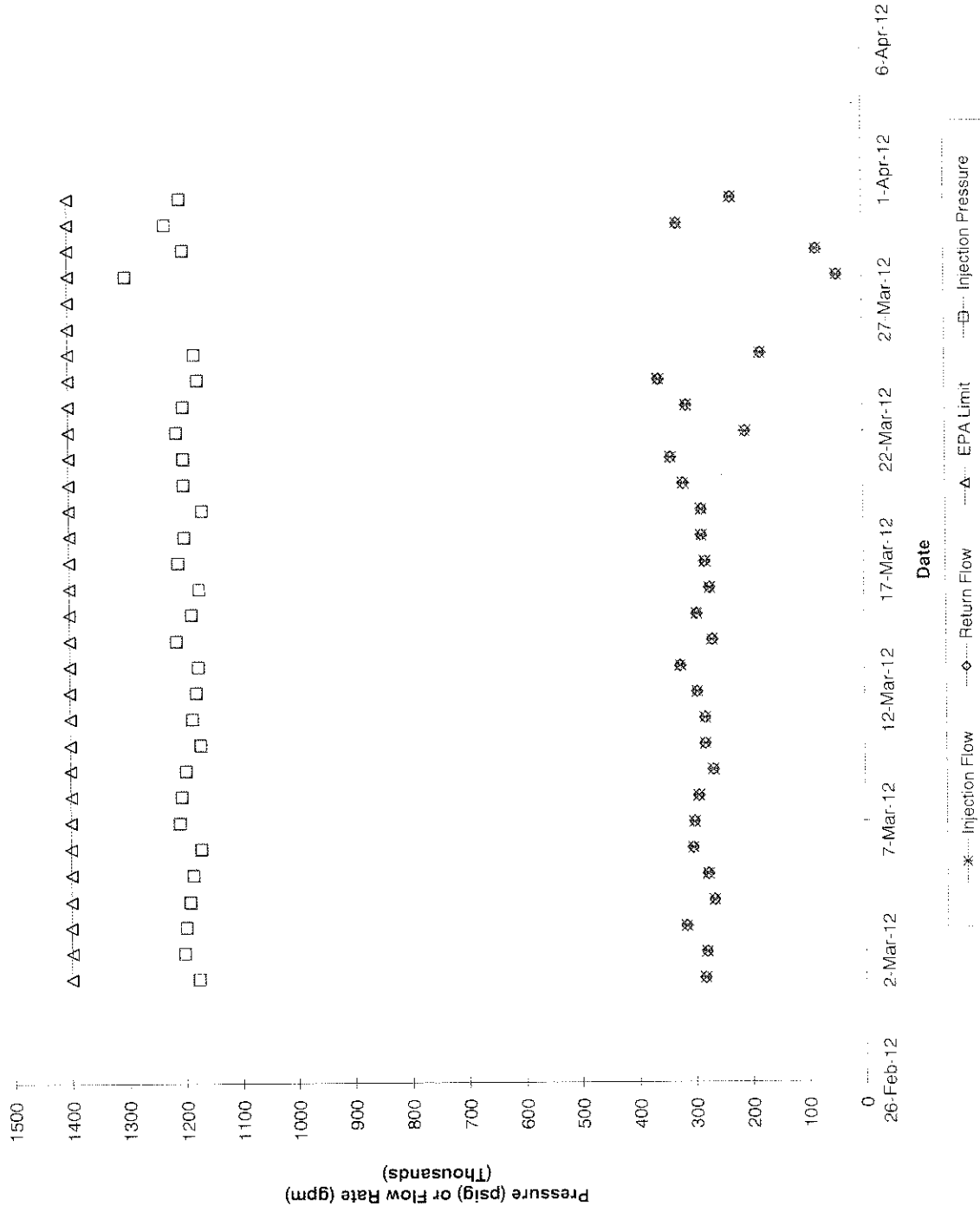
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in

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Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	1178	153	153
2-Mar-12	1203	135	135
3-Mar-12	1200	135	135
4-Mar-12	1193	111	111
5-Mar-12	1187	94	94
6-Mar-12	1173	94	94
7-Mar-12	1210	100	100
8-Mar-12	1207	108	108
9-Mar-12	1200	101	101
10-Mar-12	1173	126	126
11-Mar-12	1187	135	135
12-Mar-12	1180	132	132
13-Mar-12	1176	130	130
14-Mar-12	1215	131	131
15-Mar-12	1188	115	115
16-Mar-12	1175	117	117
17-Mar-12	1210	110	110
18-Mar-12	1200	107	107
19-Mar-12	1168	119	119
20-Mar-12	1200	130	130
21-Mar-12	1200	107	107
22-Mar-12	1213	96	96
23-Mar-12	1200	90	90
24-Mar-12	1175	97	97
25-Mar-12	1180	71	71
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in
29-Mar-12	0	7	7
30-Mar-12	1230	159	159
31-Mar-12	1204	135	135

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EPA, REGION 5

Cavity 2061

Mar-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1151	112	112

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Mar-12	1230	159

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
29-Mar-12	0	7

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
30-Mar-12	159	1230

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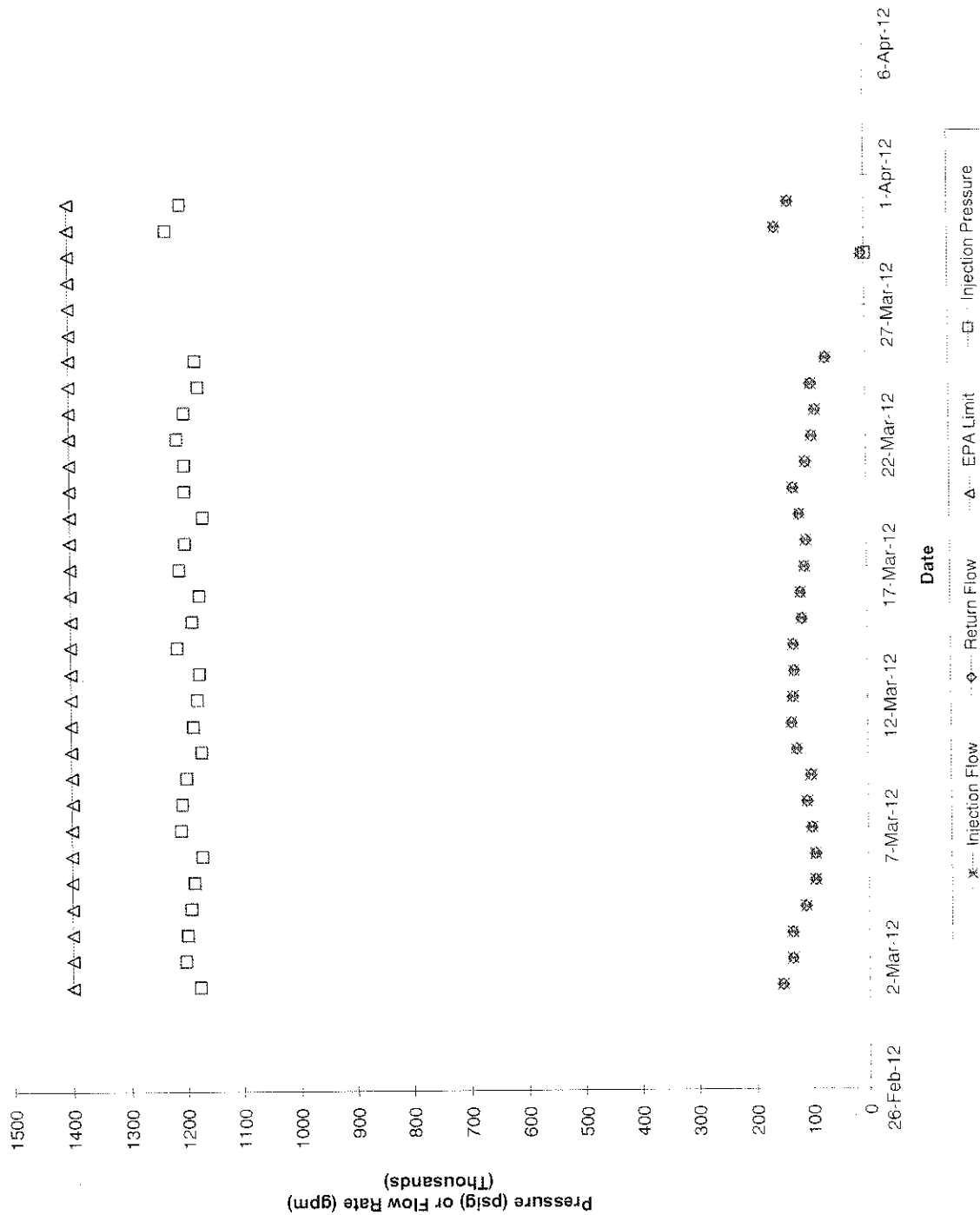
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EPA, REGION 5



# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



CAVITY 2062

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EPA, REGION 5

Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Mar-12	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in

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APR 19 2012

UIC BRANCH  
EPA, REGION 5



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

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APR 19 2012

April 12, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU – 16J  
Chicago, IL 60604

UIC BRANCH  
EPA, REGION 5

Attn: Lisa Perenchio

SUBJ: **First Quarter Report** – Solution Mining Wells  
For the period of January 1, 2012 – March 31, 2012  
Permit No.: MI-133-3G-A002

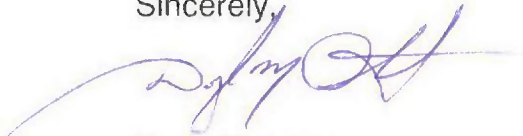
1. Solution Mining operations from Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061, Cavity 2062 were conducted during the quarter.
2. Well re-work reports for all well workovers during the period were submitted under separate cover by Doug Patulski, Minefield Superintendent.
3. The flowrates to and from the solution mining wells are monitored continuously. The required quarterly well injection/return balance demonstrations for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062 are attached.
4. The fluid level in the injection zone is “at surface”.
5. Attached are copies of the well fluid chemical analyses for Cavity 1010, Cavity 1020, Cavity 1040, Cavity 1050, Cavity 1060, Cavity 2030, Cavity 2040, Cavity 2061 and Cavity 2062.
6. Attached are the chemical analyses of the fluid samples obtained from the ground water monitoring wells.

The requirements of Part I (E)(10), Part II (B)(2) and Part III (C)(3) of Permit No. MI-133-3G-A002 are being met. The samples and measurements are representative of the monitoring activity and the analysis complies with the methods and procedures approved in the Waste Analysis Plan.

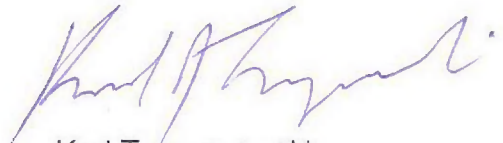
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Please contact me at (231) 832-8800 if you have any questions.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Doug Patulski', with a stylized flourish at the end.

Doug Patulski  
Minefield Superintendent

A handwritten signature in blue ink, appearing to read 'Karl Tomaszewski', with a stylized flourish at the end.

Karl Tomaszewski  
Site Manager

Attachments

**Quarterly Injection/Return Flow Balances**  
**Cavity 1010**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	shut in	shut in	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in	shut in	shut in
1-Feb-12	shut in	shut in	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances  
Cavity 1010**

15-Feb-12	shut in	shut in	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in	shut in	shut in
1-Mar-12	shut in	shut in	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in	shut in	shut in

Averages	shut in	shut in	shut in	shut in	shut in
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**Quarterly Injection/Return Flow Balances**  
**Cavity 1020**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	shut in	shut in	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in	shut in	shut in
20-Jan-12	339	0.0	339	336	1.01
21-Jan-12	320	0.0	320	319	1.00
22-Jan-12	317	0.0	317	299	1.06
23-Jan-12	289	0.0	289	284	1.02
24-Jan-12	80	0.0	80	144	0.56
25-Jan-12	shut in	shut in	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in	shut in	shut in
30-Jan-12	233	0.0	233	261	0.89
31-Jan-12	243	0.0	243	257	0.95
1-Feb-12	243	8.4	251	251	1.00
2-Feb-12	262	5.7	268	270	0.99
3-Feb-12	270	5.9	276	271	1.02
4-Feb-12	273	0.0	273	262	1.04
5-Feb-12	233	5.1	238	247	0.96
6-Feb-12	271	6.1	277	274	1.01
7-Feb-12	268	6.1	274	268	1.02
8-Feb-12	294	0.0	294	301	0.98
9-Feb-12	271	0.0	271	260	1.04
10-Feb-12	202	4.4	206	195	1.06
11-Feb-12	252	4.0	256	253	1.01
12-Feb-12	250	0.0	250	264	0.95
13-Feb-12	257	0.0	257	261	0.98
14-Feb-12	292	0.0	292	292	1.00



**Quarterly Injection/Return Flow Balances**  
**Cavity 1020**

15-Feb-12	281	4.7	286	287	1.00
16-Feb-12	303	0.9	304	307	0.99
17-Feb-12	298	0.0	298	298	1.00
18-Feb-12	290	4.6	295	294	1.00
19-Feb-12	300	0.0	300	303	0.99
20-Feb-12	323	6.4	329	327	1.01
21-Feb-12	319	0.0	319	317	1.01
22-Feb-12	326	0.0	326	324	1.01
23-Feb-12	306	0.0	306	308	0.99
24-Feb-12	313	2.8	316	315	1.00
25-Feb-12	333	6.1	339	333	1.02
26-Feb-12	319	5.8	325	317	1.02
27-Feb-12	354	7.0	361	367	0.98
28-Feb-12	367	7.5	375	362	1.03
29-Feb-12	372	5.2	377	368	1.03
1-Mar-12	374	4.8	379	361	1.05
2-Mar-12	386	0.0	386	381	1.01
3-Mar-12	382	0.0	382	375	1.02
4-Mar-12	351	0.0	351	356	0.99
5-Mar-12	327	5.6	333	295	1.13
6-Mar-12	191	5.1	196	201	0.98
7-Mar-12	204	0.0	204	202	1.01
8-Mar-12	196	6.1	202	202	1.00
9-Mar-12	181	5.4	186	176	1.06
10-Mar-12	167	4.2	171	160	1.07
11-Mar-12	shut in	shut in	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in	shut in	shut in
31-Mar-12	215	0.0	215	224	0.96
Averages	283	2.8	286	285	1.00

**Quarterly Injection/Return Flow Balances**  
**Cavity 1040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	shut in	shut in	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in	shut in	shut in
1-Feb-12	shut in	shut in	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in	shut in	shut in

# Quarterly Injection/Return Flow Balances

## Cavity 1040

15-Feb-12	shut in	shut in	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in	shut in	shut in
1-Mar-12	shut in	shut in	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in	shut in	shut in
Averages	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances  
Cavity 1050**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	164	4.0	168	164	1.02
2-Jan-12	188	5.3	193	188	1.03
3-Jan-12	189	5.7	195	189	1.03
4-Jan-12	200	3.6	204	200	1.02
5-Jan-12	184	4.4	188	184	1.02
6-Jan-12	165	4.7	170	165	1.03
7-Jan-12	153	4.8	158	153	1.03
8-Jan-12	193	4.8	198	193	1.02
9-Jan-12	183	4.8	188	183	1.03
10-Jan-12	164	5.0	169	164	1.03
11-Jan-12	150	4.7	155	150	1.03
12-Jan-12	199	0.0	199	199	1.00
13-Jan-12	180	2.8	183	180	1.02
14-Jan-12	179	4.7	184	179	1.03
15-Jan-12	150	4.8	155	150	1.03
16-Jan-12	193	0.0	193	193	1.00
17-Jan-12	178	0.0	178	178	1.00
18-Jan-12	67	0.9	68	67	1.01
19-Jan-12	shut in	shut in	shut in	shut in	shut in
20-Jan-12	194	0.0	194	194	1.00
21-Jan-12	188	0.0	188	188	1.00
22-Jan-12	183	0.0	183	183	1.00
23-Jan-12	197	0.0	197	197	1.00
24-Jan-12	141	5.0	146	141	1.04
25-Jan-12	197	0.0	197	197	1.00
26-Jan-12	197	0.0	197	197	1.00
27-Jan-12	179	3.8	183	179	1.02
28-Jan-12	171	3.9	175	171	1.02
29-Jan-12	189	3.8	193	189	1.02
30-Jan-12	190	0.0	190	190	1.00
31-Jan-12	152	0.0	152	152	1.00
1-Feb-12	158	4.8	163	158	1.03
2-Feb-12	165	4.4	169	165	1.03
3-Feb-12	166	4.5	171	166	1.03
4-Feb-12	162	0.0	162	162	1.00
5-Feb-12	145	2.7	148	145	1.02
6-Feb-12	179	4.7	184	179	1.03
7-Feb-12	170	4.6	175	170	1.03
8-Feb-12	185	0.0	185	185	1.00
9-Feb-12	177	0.0	177	177	1.00
10-Feb-12	116	4.0	120	116	1.03
11-Feb-12	162	3.4	165	162	1.02
12-Feb-12	176	0.0	176	176	1.00
13-Feb-12	175	0.0	175	175	1.00
14-Feb-12	180	0.0	180	180	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 1050**

15-Feb-12	159	1.2	160	159	1.01
16-Feb-12	179	3.9	183	179	1.02
17-Feb-12	181	0.0	181	181	1.00
18-Feb-12	184	1.6	186	184	1.01
19-Feb-12	193	0.0	193	193	1.00
20-Feb-12	177	2.4	179	177	1.01
21-Feb-12	181	0.0	181	181	1.00
22-Feb-12	182	0.0	182	182	1.00
23-Feb-12	180	0.0	180	180	1.00
24-Feb-12	176	1.8	178	176	1.01
25-Feb-12	186	3.1	189	186	1.02
26-Feb-12	186	3.5	190	186	1.02
27-Feb-12	173	4.7	178	173	1.03
28-Feb-12	181	5.2	186	181	1.03
29-Feb-12	189	4.5	194	189	1.02
1-Mar-12	187	3.2	190	187	1.02
2-Mar-12	182	0.0	182	182	1.00
3-Mar-12	191	0.0	191	191	1.00
4-Mar-12	194	0.0	194	194	1.00
5-Mar-12	176	6.3	182	176	1.04
6-Mar-12	161	3.2	164	161	1.02
7-Mar-12	179	3.0	182	179	1.02
8-Mar-12	184	4.5	189	184	1.02
9-Mar-12	166	5.1	171	166	1.03
10-Mar-12	166	5.3	171	166	1.03
11-Mar-12	210	5.2	215	210	1.02
12-Mar-12	177	0.0	177	177	1.00
13-Mar-12	181	0.0	181	181	1.00
14-Mar-12	180	6.1	186	180	1.03
15-Mar-12	181	5.7	187	181	1.03
16-Mar-12	184	5.7	190	184	1.03
17-Mar-12	175	5.7	181	175	1.03
18-Mar-12	167	0.0	167	167	1.00
19-Mar-12	157	4.3	161	157	1.03
20-Mar-12	182	5.6	188	182	1.03
21-Mar-12	181	0.0	181	181	1.00
22-Mar-12	179	0.0	179	179	1.00
23-Mar-12	188	0.9	189	188	1.00
24-Mar-12	185	5.1	190	185	1.03
25-Mar-12	61	2.4	63	61	1.04
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	37	0.0	37	37	1.00
29-Mar-12	58	3.3	61	58	1.06
30-Mar-12	166	0.0	166	166	1.00
31-Mar-12	145	0.0	145	145	1.00
Averages	171	2.6	174	171	1.02

**Quarterly Injection/Return Flow Balances**  
**Cavity 1060**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	347	5.7	353	351	1.00
2-Jan-12	340	6.2	346	360	0.96
3-Jan-12	333	6.6	340	356	0.95
4-Jan-12	347	4.3	351	329	1.07
5-Jan-12	347	5.1	352	341	1.03
6-Jan-12	354	5.1	359	379	0.95
7-Jan-12	333	5.5	339	350	0.97
8-Jan-12	375	5.0	380	390	0.97
9-Jan-12	361	3.4	364	370	0.98
10-Jan-12	375	6.5	382	378	1.01
11-Jan-12	368	6.6	375	381	0.98
12-Jan-12	382	0.0	382	394	0.97
13-Jan-12	340	2.8	343	350	0.98
14-Jan-12	368	5.8	374	374	1.00
15-Jan-12	361	6.1	367	369	0.99
16-Jan-12	375	0.0	375	379	0.99
17-Jan-12	361	0.0	361	366	0.99
18-Jan-12	361	5.2	366	373	0.98
19-Jan-12	347	6.4	353	372	0.95
20-Jan-12	shut in	shut in	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in	shut in	shut in
24-Jan-12	396	2.6	399	415	0.96
25-Jan-12	347	0.0	347	369	0.94
26-Jan-12	389	5.1	394	369	1.07
27-Jan-12	333	1.8	335	363	0.92
28-Jan-12	368	5.3	373	370	1.01
29-Jan-12	361	5.4	366	371	0.99
30-Jan-12	shut in	shut in	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in	shut in	shut in
1-Feb-12	shut in	shut in	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances**  
**Cavity 1060**

15-Feb-12	shut in	shut in	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in	shut in	shut in
1-Mar-12	shut in	shut in	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in	shut in	shut in
6-Mar-12	229	5.3	234	211	1.11
7-Mar-12	215	3.0	218	208	1.05
8-Mar-12	208	3.1	211	205	1.03
9-Mar-12	208	6.6	215	195	1.10
10-Mar-12	215	0.0	215	215	1.00
11-Mar-12	264	3.8	268	289	0.93
12-Mar-12	340	0.0	340	336	1.01
13-Mar-12	354	0.0	354	363	0.98
14-Mar-12	347	1.8	349	355	0.98
15-Mar-12	347	5.5	353	357	0.99
16-Mar-12	340	4.9	345	355	0.97
17-Mar-12	340	4.3	344	356	0.97
18-Mar-12	340	0.0	340	354	0.96
19-Mar-12	354	3.5	358	347	1.03
20-Mar-12	313	0.0	313	303	1.03
21-Mar-12	326	0.0	326	324	1.01
22-Mar-12	313	0.0	313	308	1.02
23-Mar-12	313	1.5	315	328	0.96
24-Mar-12	313	4.8	318	320	0.99
25-Mar-12	146	2.4	148	146	1.02
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	0	0.0	0	75	0.00
29-Mar-12	0	0.0	0	135	0.00
30-Mar-12	shut in	shut in	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in	shut in	shut in
Averages	315	3.3	318	326	0.95

**Quarterly Injection/Return Flow Balances  
Cavity 2030**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	274	0.0	274	274	1.00
2-Jan-12	250	0.0	250	250	1.00
3-Jan-12	250	0.0	250	250	1.00
4-Jan-12	254	0.0	254	254	1.00
5-Jan-12	277	0.0	277	277	1.00
6-Jan-12	274	0.0	274	274	1.00
7-Jan-12	250	6.0	256	250	1.02
8-Jan-12	274	5.3	279	274	1.02
9-Jan-12	237	0.0	237	237	1.00
10-Jan-12	255	0.0	255	255	1.00
11-Jan-12	257	0.0	257	257	1.00
12-Jan-12	263	0.0	263	263	1.00
13-Jan-12	174	0.0	174	174	1.00
14-Jan-12	233	0.0	233	233	1.00
15-Jan-12	242	0.0	242	242	1.00
16-Jan-12	253	0.0	253	253	1.00
17-Jan-12	273	0.0	273	273	1.00
18-Jan-12	268	0.0	268	268	1.00
19-Jan-12	319	0.0	319	319	1.00
20-Jan-12	260	0.0	260	260	1.00
21-Jan-12	235	0.0	235	235	1.00
22-Jan-12	264	0.0	264	264	1.00
23-Jan-12	250	0.0	250	250	1.00
24-Jan-12	269	0.0	269	269	1.00
25-Jan-12	233	0.0	233	233	1.00
26-Jan-12	233	0.0	233	233	1.00
27-Jan-12	280	0.0	280	280	1.00
28-Jan-12	278	0.0	278	278	1.00
29-Jan-12	304	0.0	304	304	1.00
30-Jan-12	250	0.0	250	250	1.00
31-Jan-12	297	0.0	297	297	1.00
1-Feb-12	304	0.0	304	304	1.00
2-Feb-12	308	0.0	308	308	1.00
3-Feb-12	313	0.0	313	313	1.00
4-Feb-12	295	0.0	295	295	1.00
5-Feb-12	280	0.0	280	280	1.00
6-Feb-12	251	0.0	251	251	1.00
7-Feb-12	268	0.0	268	268	1.00
8-Feb-12	297	0.0	297	297	1.00
9-Feb-12	258	0.0	258	258	1.00
10-Feb-12	176	0.0	176	176	1.00
11-Feb-12	238	0.0	238	238	1.00
12-Feb-12	243	0.0	243	243	1.00
13-Feb-12	245	0.0	245	245	1.00
14-Feb-12	300	0.0	300	300	1.00



**Quarterly Injection/Return Flow Balances**  
**Cavity 2030**

15-Feb-12	257	0.0	257	257	1.00
16-Feb-12	275	0.0	275	275	1.00
17-Feb-12	259	0.0	259	259	1.00
18-Feb-12	258	0.0	258	258	1.00
19-Feb-12	253	0.0	253	253	1.00
20-Feb-12	281	0.0	281	281	1.00
21-Feb-12	296	0.0	296	296	1.00
22-Feb-12	306	0.0	306	306	1.00
23-Feb-12	298	0.0	298	298	1.00
24-Feb-12	297	0.0	297	297	1.00
25-Feb-12	290	0.0	290	290	1.00
26-Feb-12	277	0.0	277	277	1.00
27-Feb-12	271	5.0	276	271	1.02
28-Feb-12	327	0.0	327	327	1.00
29-Feb-12	290	0.0	290	290	1.00
1-Mar-12	283	0.0	283	283	1.00
2-Mar-12	280	0.0	280	280	1.00
3-Mar-12	316	0.0	316	316	1.00
4-Mar-12	266	0.0	266	266	1.00
5-Mar-12	277	0.0	277	277	1.00
6-Mar-12	304	0.0	304	304	1.00
7-Mar-12	301	0.0	301	301	1.00
8-Mar-12	293	0.0	293	293	1.00
9-Mar-12	267	0.0	267	267	1.00
10-Mar-12	281	0.0	281	281	1.00
11-Mar-12	281	0.0	281	281	1.00
12-Mar-12	295	0.0	295	295	1.00
13-Mar-12	325	0.0	325	325	1.00
14-Mar-12	268	0.0	268	268	1.00
15-Mar-12	295	0.0	295	295	1.00
16-Mar-12	272	0.0	272	272	1.00
17-Mar-12	280	0.0	280	280	1.00
18-Mar-12	286	0.0	286	286	1.00
19-Mar-12	286	0.0	286	286	1.00
20-Mar-12	318	0.0	318	318	1.00
21-Mar-12	340	0.0	340	340	1.00
22-Mar-12	208	0.0	208	208	1.00
23-Mar-12	312	0.0	312	312	1.00
24-Mar-12	361	0.0	361	361	1.00
25-Mar-12	181	0.0	181	181	1.00
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	46	0.0	46	46	1.00
29-Mar-12	81	0.0	81	81	1.00
30-Mar-12	327	0.0	327	327	1.00
31-Mar-12	231	0.0	231	231	1.00
Averages	269	0.2	269	269	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2040**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	shut in	shut in	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in	shut in	shut in
1-Feb-12	shut in	shut in	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in	shut in	shut in

# Quarterly Injection/Return Flow Balances Cavity 2040

15-Feb-12	shut in	shut in	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in	shut in	shut in
1-Mar-12	shut in	shut in	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in	shut in	shut in
Averages	shut in	shut in	shut in	shut in	shut in

**Quarterly Injection/Return Flow Balances  
Cavity 2061**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	176	0.0	176	176	1.00
2-Jan-12	166	0.0	166	166	1.00
3-Jan-12	158	0.0	158	158	1.00
4-Jan-12	167	0.0	167	167	1.00
5-Jan-12	173	0.0	173	173	1.00
6-Jan-12	149	5.8	155	149	1.04
7-Jan-12	129	0.0	129	129	1.00
8-Jan-12	130	0.0	130	130	1.00
9-Jan-12	117	0.0	117	117	1.00
10-Jan-12	163	0.0	163	163	1.00
11-Jan-12	134	0.0	134	134	1.00
12-Jan-12	122	0.0	122	122	1.00
13-Jan-12	156	0.0	156	156	1.00
14-Jan-12	119	0.0	119	119	1.00
15-Jan-12	106	0.0	106	106	1.00
16-Jan-12	127	0.0	127	127	1.00
17-Jan-12	99	0.0	99	99	1.00
18-Jan-12	158	0.0	158	158	1.00
19-Jan-12	222	0.0	222	222	1.00
20-Jan-12	172	0.0	172	172	1.00
21-Jan-12	126	0.0	126	126	1.00
22-Jan-12	170	0.0	170	170	1.00
23-Jan-12	146	0.0	146	146	1.00
24-Jan-12	118	0.0	118	118	1.00
25-Jan-12	89	0.0	89	89	1.00
26-Jan-12	89	0.0	89	89	1.00
27-Jan-12	98	0.0	98	98	1.00
28-Jan-12	85	0.0	85	85	1.00
29-Jan-12	98	0.0	98	98	1.00
30-Jan-12	179	0.0	179	179	1.00
31-Jan-12	117	0.0	117	117	1.00
1-Feb-12	117	0.0	117	117	1.00
2-Feb-12	123	0.0	123	123	1.00
3-Feb-12	114	0.0	114	114	1.00
4-Feb-12	98	0.0	98	98	1.00
5-Feb-12	92	0.0	92	92	1.00
6-Feb-12	107	0.0	107	107	1.00
7-Feb-12	89	0.0	89	89	1.00
8-Feb-12	108	0.0	108	108	1.00
9-Feb-12	135	0.0	135	135	1.00
10-Feb-12	86	0.0	86	86	1.00
11-Feb-12	158	0.0	158	158	1.00
12-Feb-12	306	0.0	306	306	1.00
13-Feb-12	130	0.0	130	130	1.00
14-Feb-12	137	0.0	137	137	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2061**

15-Feb-12	125	0.0	125	125	1.00
16-Feb-12	122	0.0	122	122	1.00
17-Feb-12	115	0.0	115	115	1.00
18-Feb-12	257	0.0	257	257	1.00
19-Feb-12	119	0.0	119	119	1.00
20-Feb-12	120	0.0	120	120	1.00
21-Feb-12	124	0.0	124	124	1.00
22-Feb-12	116	0.0	116	116	1.00
23-Feb-12	107	0.0	107	107	1.00
24-Feb-12	136	0.0	136	136	1.00
25-Feb-12	128	0.0	128	128	1.00
26-Feb-12	108	0.0	108	108	1.00
27-Feb-12	159	0.0	159	159	1.00
28-Feb-12	137	0.0	137	137	1.00
29-Feb-12	117	0.0	117	117	1.00
1-Mar-12	153	0.0	153	153	1.00
2-Mar-12	135	0.0	135	135	1.00
3-Mar-12	135	0.0	135	135	1.00
4-Mar-12	111	0.0	111	111	1.00
5-Mar-12	94	0.0	94	94	1.00
6-Mar-12	94	0.0	94	94	1.00
7-Mar-12	100	0.0	100	100	1.00
8-Mar-12	108	0.0	108	108	1.00
9-Mar-12	101	0.0	101	101	1.00
10-Mar-12	126	0.0	126	126	1.00
11-Mar-12	135	0.0	135	135	1.00
12-Mar-12	132	0.0	132	132	1.00
13-Mar-12	130	0.0	130	130	1.00
14-Mar-12	131	0.0	131	131	1.00
15-Mar-12	115	0.0	115	115	1.00
16-Mar-12	117	0.0	117	117	1.00
17-Mar-12	110	0.0	110	110	1.00
18-Mar-12	107	0.0	107	107	1.00
19-Mar-12	119	0.0	119	119	1.00
20-Mar-12	130	0.0	130	130	1.00
21-Mar-12	107	0.0	107	107	1.00
22-Mar-12	96	0.0	96	96	1.00
23-Mar-12	90	0.0	90	90	1.00
24-Mar-12	97	0.0	97	97	1.00
25-Mar-12	71	0.0	71	71	1.00
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in	shut in	shut in
29-Mar-12	7	0.0	7	7	1.00
30-Mar-12	159	0.0	159	159	1.00
31-Mar-12	135	0.0	135	135	1.00
Averages	127	0.1	127	127	1.00

**Quarterly Injection/Return Flow Balances  
Cavity 2062**

<u>Date</u>	<u>Injection Flow</u>	<u>Dilution Flow</u>	<u>Total Injection Flow</u>	<u>Return Flow</u>	<u>Ratio Inj/Ret</u>
1-Jan-12	shut in	shut in	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in	shut in	shut in
1-Feb-12	shut in	shut in	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in	shut in	shut in

# Quarterly Injection/Return Flow Balances

## Cavity 2062

15-Feb-12	shut in	shut in	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in	shut in	shut in
1-Mar-12	shut in	shut in	shut in	shut in	shut in
2-Mar-12	shut in	shut in	shut in	shut in	shut in
3-Mar-12	shut in	shut in	shut in	shut in	shut in
4-Mar-12	shut in	shut in	shut in	shut in	shut in
5-Mar-12	shut in	shut in	shut in	shut in	shut in
6-Mar-12	shut in	shut in	shut in	shut in	shut in
7-Mar-12	shut in	shut in	shut in	shut in	shut in
8-Mar-12	shut in	shut in	shut in	shut in	shut in
9-Mar-12	shut in	shut in	shut in	shut in	shut in
10-Mar-12	shut in	shut in	shut in	shut in	shut in
11-Mar-12	shut in	shut in	shut in	shut in	shut in
12-Mar-12	shut in	shut in	shut in	shut in	shut in
13-Mar-12	shut in	shut in	shut in	shut in	shut in
14-Mar-12	shut in	shut in	shut in	shut in	shut in
15-Mar-12	shut in	shut in	shut in	shut in	shut in
16-Mar-12	shut in	shut in	shut in	shut in	shut in
17-Mar-12	shut in	shut in	shut in	shut in	shut in
18-Mar-12	shut in	shut in	shut in	shut in	shut in
19-Mar-12	shut in	shut in	shut in	shut in	shut in
20-Mar-12	shut in	shut in	shut in	shut in	shut in
21-Mar-12	shut in	shut in	shut in	shut in	shut in
22-Mar-12	shut in	shut in	shut in	shut in	shut in
23-Mar-12	shut in	shut in	shut in	shut in	shut in
24-Mar-12	shut in	shut in	shut in	shut in	shut in
25-Mar-12	shut in	shut in	shut in	shut in	shut in
26-Mar-12	shut in	shut in	shut in	shut in	shut in
27-Mar-12	shut in	shut in	shut in	shut in	shut in
28-Mar-12	shut in	shut in	shut in	shut in	shut in
29-Mar-12	shut in	shut in	shut in	shut in	shut in
30-Mar-12	shut in	shut in	shut in	shut in	shut in
31-Mar-12	shut in	shut in	shut in	shut in	shut in

Averages	shut in	shut in	shut in	shut in	shut in
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**Cluster 1  
2012 Monitor Well Results  
1st Quarter**

Date	Well Number	Chloride Concentration (mg/L)
March 2012	Cluster 1 M.W. 1	230.4
March 2012	Cluster 1 M.W. 2	429.0
March 2012	Cluster 1 M.W. 3	35.5
March 2012	Cluster 1 M.W. 4	1,435.8
March 2012	Cluster 1 M.W. 5	826.1
March 2012	Cluster 1 M.W. 6	177.3
March 2012	Cluster 1 M.W. 7	496.3
March 2012	Cluster 1 M.W. 8	411.3
March 2012	Cluster 1 M.W. 9	7,622.4
March 2012	Cluster 1 M.W. 10	1,134.5
March 2012	Cluster 1 M.W. 11	432.5
March 2012	Cluster 1 M.W. 12	585.0
March 2012	Cluster 1 M.W. 13	4,644.3
March 2012	Cluster 1 M.W. 14	234.0
March 2012	Cluster 1 M.W. 34	1,967.6
March 2012	Cluster 1 M.W. 35	109.9
March 2012	Cluster 1 M.W. 36	14.2
March 2012	Cluster 1 M.W. 37	2,659.0
March 2012	Cluster 1 M.W. 38	7.1
March 2012	Cluster 1 M.W. 39	7.1
March 2012	Cluster 1 M.W. 40	205.6



**Cluster 2  
2012 Monitor Well Results  
1st Quarter**

<b>Date</b>	<b>Well Number</b>	<b>Chloride Concentration (mg/L)</b>
March 2012	Cluster 2 M.W. 1	No sample
March 2012	Cluster 2 M.W. 2	Dry well
March 2012	Cluster 2 M.W. 4	109.9
March 2012	Cluster 2 M.W. 5	127.6
March 2012	Cluster 2 M.W. 6	12.4
March 2012	Cluster 2 M.W. 33	37.2

Thomas 1-26  
2012 Monitor Well Results  
1st Quarter

Date	Well Number	Chloride Concentration (mg/L)
March 2012	Thomas 1-26 M.W. 1	53.2
March 2012	Thomas 1-26 M.W. 2	3.6
March 2012	Thomas 1-26 M.W. 3	7.1
March 2012	Thomas 1-26 M.W. 4	56.7
March 2012	Thomas 1-26 M.W. 5	0

Woodward 1-26  
2012 Monitor Well Results  
1st Quarter

Date	Well Number	Chloride Concentration (mg/L)
March 2012	Woodward 1-26 M.W. 1	19.5
March 2012	Woodward 1-26 M.W. 2	5.3

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED TIME SAMPLED SAMPLE # SAMPLER NAME/SIGNATURE

3-2-12	7:45 A.M.	1 (PP-1)	Antonia Petito
3-7-12	8:10 A.M.	2 (PP-2)	Antonia Petito
3-7-12	8:30 A.M.	3 (PP-3)	Antonia Petito
3-7-12	8:45 A.M.	4 (W-126-1)	Antonia Petito
3-7-12	9:00 A.M.	5 (W-126-2)	Antonia Petito
		6 (CL2-1)	W. Swamp
3-7-12	9:35 A.M.	7 (CL2-5)	Antonia Petito
3-7-12	9:15 A.M.	8 (CL2-6)	Antonia Petito
3-7-12	9:50 A.M.	9 (CL2-4)	Antonia Petito
Dry Well		10 (CL2-2)	
3-7-12	10:20 A.M.	11 (CL1-3)	Antonia Petito
3-7-12	10:45 A.M.	12 (CL1-6)	Antonia Petito
3-7-12	10:50 A.M.	13 (CL1-5)	Antonia Petito
3-7-12	11:00 A.M.	14 (CL1-7)	Antonia Petito
3-7-12	10:55 A.M.	15 (CL1-1)	Antonia Petito
3-7-12	11:00 A.M.	16 (CL1-2)	Antonia Petito
3-7-12	11:30 A.M.	17 (CL1-9)	Antonia Petito
3-7-12	2:00 P.M.	18 (CL1-11)	Antonia Petito
3-7-12	11:45 A.M.	19 (CL1-8)	Antonia Petito
3-7-12	11:00 A.M.	20 (CL1-4)	Antonia Petito
3-7-12	1:30 P.M.	21 (PW94-2)	Antonia Petito
		22 (PW94-1)	
3-7-12	11:35 A.M.	23 (CL1-10)	Antonia Petito
3-7-12	11:40 A.M.	24 (T-126-1)	Antonia Petito
3-7-12	2:00 P.M.	25 (CL1-12)	Antonia Petito
3-7-12	12:55 P.M.	26 (T-126-2)	Antonia Petito
3-7-12	12:15 P.M.	27 (T-126-3)	Antonia Petito
3-7-12	12:35 P.M.	28 (T-126-5)	Antonia Petito
3-7-12	12:45 P.M.	29 (T-126-4)	Antonia Petito
		30 (CL1-13)	
3-7-12	10:15 A.M.	31 (CL1-14)	Antonia Petito
3-7-12	9:55 A.M.	32 (PW-32)	Antonia Petito
3-7-12	10:05 A.M.	33 (CL2-33)	Antonia Petito
3-7-12	2:45 P.M.	34 (CL1-34)	Antonia Petito
3-7-12	2:35 P.M.	35 (MW-35)	Antonia Petito
		36 (MW-36)	
		37 (MW-37)	
		38 (MW-38)	
		39 (MW-39)	
		40 (MW-40)	
3-7-12	1:55 P.M.	41 (PW-41)	Antonia Petito

Received in Lab By (Name/Signature)

Alison Vande

Date Received R: 3/7/12

Time Received 3:30 PM

MOSAIC POTASH HERSEY  
MONITORING WELLS  
CHAIN OF CUSTODY

DATE SAMPLED	TIME SAMPLED	SAMPLE #	SAMPLER NAME/SIGNATURE
		1 (PP-1)	
		2 (PP-2)	
		3 (PP-3)	
		4 (W-126-1)	
		5 (W-126-2)	
	Swamp	6 (CL2-1)	
		7 (CL2-5)	
		8 (CL2-6)	
		9 (CL2-4)	
	Dry Well	10 (CL2-2)	
		11 (CL1-3)	
		12 (CL1-6)	
		13 (CL1-5)	
		14 (CL1-7)	
		15 (CL1-1)	
		16 (CL1-2)	
		17 (CL1-9)	
		18 (CL1-11)	
		19 (CL1-8)	
		20 (CL1-4)	
		21 (PW94-2)	
3-9-12	9:40 AM	22 (PW94-1)	Antonia Petito
		23 (CL1-10)	
		24 (T-126-1)	
		25 (CL1-12)	
		26 (T-126-2)	
		27 (T-126-3)	
		28 (T-126-5)	
		29 (T-126-4)	
3-9-12	9:55 AM	30 (CL1-13)	Antonia Petito
		31 (CL1-14)	
		32 (PW-32)	
		33 (CL2-33)	
		34 (CL1-34)	
		35 (MW-35)	
3-9-12	9:30 AM	36 (MW-38)	Antonia Petito
3-9-12	10:30 AM	37 (MW-37)	Antonia Petito
3-9-12	10:10 AM	38 (MW-38)	Antonia Petito
3-9-12	11:10 AM	39 (MW-39)	Antonia Petito
3-9-12	10:50 AM	40 (MW-40)	Antonia Petito
		41 (PW-41)	

Received in Lab By (Name/Signature)

Date Received

3/9/12

Time Received

11:30 AM

Allison Van Co

March 27, 2012

Mosaic Potash - Hersey  
Attn: Ms. Allison VanOs  
1395 - 135th Avenue  
Hersey, MI 49639

**Project: Quarterly Monitoring of Inorganic Pollutants**

Dear Ms. Allison VanOs,

Enclosed is a copy of the laboratory report for the following work order(s) received by TriMatrix Laboratories:

<b>Work Order</b>	<b>Received</b>	<b>Description</b>
1203194	03/14/2012	Laboratory Services

This report relates only to the sample(s) as received. Test results are in compliance with the requirements of the National Environmental Laboratory Accreditation Program (NELAP) and/or one of the following certification programs:

ACLASS DoD-ELAP/ISO17025 (#ADE-1542); Arkansas DEP (#10-046-0); Florida DEP (#E87622-24); Georgia EPD (#E87622-24); Illinois DEP (#002841); Kansas DPH (#E-10302); Kentucky DEP (#0021); Louisiana DEP (#03068); Michigan DPH (#0034); Minnesota DPH (#367345); New York ELAP (#44950); North Carolina DNRE (#659); Texas CEQ (#T104704495-11-1); Virginia DCLS (#1239); Wisconsin DNR (#999472650); USDA Soil Import Permit (#P330-09-00163).

Any qualification or narration of results, including sample acceptance requirements and test exceptions to the above referenced programs, is presented in the Statement of Data Qualifications section of this report. Estimates of analytical uncertainties and certification documents for the test results contained within this report are available upon request.

If you have any questions or require further information, please do not hesitate to contact me.

Sincerely,



Jennifer L. Rice  
Project Chemist



## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey**  
Project: Quarterly Monitoring of Inorganic Pollutants  
Client Sample ID: **Disposal**  
Lab Sample ID: **1203194-01**  
Matrix: Water

Work Order: **1203194**  
Description: Laboratory Services  
Sampled: 03/13/12 07:45  
Sampled By: N.T.  
Received: 03/14/12 10:15

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Barium	140	10	ug/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
Calcium	380	0.50	mg/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
Cobalt	61	10	ug/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
Copper	110	10	ug/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
Iron	1000	50	ug/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
Lead	<50	50	ug/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
Magnesium	73	0.50	mg/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
Manganese	4300	10	ug/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281
*Selenium	16	5.0	ug/L	5	USEPA-6020A	03/22/12 13:50	DSC	1203465
Sodium	13000	50	mg/L	100	USEPA-6010C	03/19/12 11:40	KLV	1203281
Zinc	150	20	ug/L	1	USEPA-6010C	03/19/12 12:15	KLV	1203281

\*See Statement of Data Qualifications

Page 2 of 10

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Individual sample results relate only to the sample tested.

5560 Corporate Exchange Court SE ♦ Grand Rapids, MI 49512 ♦ Phone: 616.975.4500 ♦ Fax: 616.942.7463 ♦ [www.trimatrixlabs.com](http://www.trimatrixlabs.com)

**ANALYTICAL REPORT**

Client: **Mosaic Potash - Hersey**  
 Project: **Quarterly Monitoring of Inorganic Pollutants**  
 Client Sample ID: **Disposal**  
 Lab Sample ID: **1203194-01**  
 Matrix: **Water**

Work Order: **1203194**  
 Description: **Laboratory Services**  
 Sampled: **03/13/12 07:45**  
 Sampled By: **N.T.**  
 Received: **03/14/12 10:15**

**Physical/Chemical Parameters by EPA/APHA/ASTM Methods**

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Chloride	23000	500	mg/L	500	SM 4500-Cl E 20th	03/19/12 14:01	LMA	1203473
Conductivity @ 25° C	62530	5	umhos/cm	1	SM 2510 B 20th	03/22/12 15:40	KCS	1203650
*pH	7.4	1.0	pH Units	1	SM 4500-H B 20th	03/14/12 15:15	SKA	1203293
Oxidation/Reduction Potential	328	1	mV	1	ASTM D 1498-76	03/16/12 07:00	LMA	1203359
Alkalinity, Bicarbonate	150	20	mg/L	1	SM 2320 B 20th	03/15/12 15:00	SKA	1203304
Alkalinity, Carbonate	<20	20	mg/L	1	SM 2320 B 20th	03/15/12 15:00	SKA	1203307
Alkalinity, Total	150	20	mg/L	1	SM 2320 B 20th	03/15/12 15:00	SKA	1203306
*Bromide	<300	300	mg/L	100	ASTM D 1246-95 (99)	03/22/12 13:32	KCS	1203636
Sulfate	310	50	mg/L	10	ASTM D516-90 (02)	03/19/12 15:04	LMA	1203470
Residue, Dissolved @ 180° C	44600	2500	mg/L	1	SM 2540 C 20th	03/19/12 11:40	KCS	1203443
Specific Gravity	1.0328	0.7000	@ 60 °F	1	ASTM D 1429-79	03/23/12 10:15	HLB	1203778
Carbon, Total Organic	1.8	1.0	mg/L	1	SM 5310 C 20th	03/22/12 13:58	LMA	1203696
*Sulfide, Total	<1.0	1.0	mg/L	1	SM 4500-S2 F 20th	03/15/12 11:00	KAR	1203408

\*See Statement of Data Qualifications





## ANALYTICAL REPORT

Client: **Mosaic Potash - Hersey** Work Order: **1203194**  
Project: Quarterly Monitoring of Inorganic Pollutants Description: Laboratory Services  
Client Sample ID: **Recycle** Sampled: 03/13/12 08:00  
Lab Sample ID: **1203194-02** Sampled By: N.T.  
Matrix: Water Received: 03/14/12 10:15

### Total Metals by EPA 6000/7000 Series Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
*Barium	220	50	ug/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Calcium	1500	2.5	mg/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Cobalt	<50	50	ug/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Copper	<50	50	ug/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Iron	1700	250	ug/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Lead	<250	250	ug/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Magnesium	100	2.5	mg/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Manganese	170	50	ug/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281
*Selenium	<25	25	ug/L	25	USEPA-6020A	03/22/12 13:16	DSC	1203465
Sodium	100000	250	mg/L	500	USEPA-6010C	03/19/12 11:51	KLV	1203281
*Zinc	<100	100	ug/L	5	USEPA-6010C	03/19/12 12:04	KLV	1203281

\*See Statement of Data Qualifications

# ANALYTICAL REPORT

Client:	<b>Mosaic Potash - Hersey</b>	Work Order:	<b>1203194</b>
Project:	Quarterly Monitoring of Inorganic Pollutants	Description:	Laboratory Services
Client Sample ID:	<b>Recycle</b>	Sampled:	03/13/12 08:00
Lab Sample ID:	<b>1203194-02</b>	Sampled By:	N.T.
Matrix:	Water	Received:	03/14/12 10:15

## Physical/Chemical Parameters by EPA/APHA/ASTM Methods

Analyte	Analytical Result	RL	Unit	Dilution Factor	Method	Date Time Analyzed	By	QC Batch
Alkalinity, Bicarbonate	38	20	mg/L	1	SM 2320 B 20th	03/15/12 15:00	SKA	1203304
Alkalinity, Carbonate	<20	20	mg/L	1	SM 2320 B 20th	03/15/12 15:00	SKA	1203307
*Bromide	1000	600	mg/L	200	ASTM D 1246-95 (99)	03/22/12 13:32	KCS	1203636
Conductivity @ 25° C	204000	5	umhos/cm	1	SM 2510 B 20th	03/22/12 15:40	KCS	1203650
Specific Gravity	1.2106	0.7000	@ 60 °F	1	ASTM D 1429-79	03/23/12 10:15	HLB	1203778
Carbon, Total Organic	<1.0	1.0	mg/L	1	SM 5310 C 20th	03/22/12 14:09	LMA	1203696
Alkalinity, Total	38	20	mg/L	1	SM 2320 B 20th	03/15/12 15:00	SKA	1203306
Oxidation/Reduction Potential	296	1	mV	1	ASTM D 1498-76	03/16/12 07:00	LMA	1203359
*pH	6.5	1.0	pH Units	1	SM 4500-H B 20th	03/14/12 15:15	SKA	1203293
Residue, Dissolved @ 180° C	338000	5000	mg/L	1	SM 2540 C 20th	03/19/12 11:40	KCS	1203443
Chloride	190000	2500	mg/L	2500	SM 4500-Cl E 20th	03/19/12 14:01	LMA	1203473
Sulfate	2400	500	mg/L	100	ASTM D516-90 (02)	03/19/12 13:50	LMA	1203470
*Sulfide, Total	6.6	1.0	mg/L	1	SM 4500-S2 F 20th	03/15/12 11:00	KAR	1203408

\*See Statement of Data Qualifications



## STATEMENT OF DATA QUALIFICATIONS

### Total Metals by EPA 6000/7000 Series Methods

**Qualification:** The RL for this analysis has been elevated due to sample matrix interference.

Analysis: USEPA-6010C

Sample/Analyte:	1203194-02	Recycle	Barium
	1203194-02	Recycle	Calcium
	1203194-02	Recycle	Cobalt
	1203194-02	Recycle	Copper
	1203194-02	Recycle	Iron
	1203194-02	Recycle	Lead
	1203194-02	Recycle	Magnesium
	1203194-02	Recycle	Manganese
	1203194-02	Recycle	Zinc

Analysis: USEPA-6020A

Sample/Analyte:	1203194-01	Disposal	Selenium
	1203194-02	Recycle	Selenium

## STATEMENT OF DATA QUALIFICATIONS

### Physical/Chemical Parameters by EPA/APHA/ASTM Methods

**Qualification:** The quality control batch(s), associated with the following samples and analyses, do not contain an MS/MSD or MS/DUP because client specific matrix QC was not requested. An LCS and LCSD were analyzed as the measure of batch precision and accuracy.

Analysis: ASTM D 1246-95 (99)

Sample/Analyte:	1203194-01	Disposal	Bromide
	1203194-02	Recycle	Bromide

Analysis: SM 4500-S2 F 20th

Sample/Analyte:	1203194-01	Disposal	Sulfide, Total
	1203194-02	Recycle	Sulfide, Total

**Qualification:** The referenced method requires analysis occur immediately after sample collection. Since the analysis was not performed in the field, the reported result is considered estimated.

Analysis: SM 4500-H B 20th

Sample/Analyte:	1203194-01	Disposal	pH
	1203194-02	Recycle	pH

**Qualification:** The following reported test methods and analyte(s) are exceptions to our NELAP Fields of Accreditation, or for which accreditation is not required, applicable, or available.

Analysis: ASTM D 1429-79


Analyte(s): Specific Gravity

Analysis: ASTM D 1498-76

Analyte(s): Oxidation/Reduction Potential



## SAMPLE RECEIVING / LOG-IN CHECKLIST

 <b>TRIMATRIX</b> LABORATORIES		Client: <u>Mosiac</u>		Work Order #: <u>1203194</u>			
		Project Before/After #: <u>5-6</u>		Project Location: _____ Sample ID: _____			
Reported by (in laboratory): <u>WC 3-14-12</u>							
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Sample  <input type="checkbox"/> Box  <input type="checkbox"/> Other _____         </div> <div> <input checked="" type="checkbox"/> IR Gun (2002)  <input type="checkbox"/> Digital Thermometer (454)  <input type="checkbox"/> Other (#) _____         </div> <div> <input type="checkbox"/> See Additional Cooler Information Form         </div> </div>							
<b>Cooler #</b> <u>Im 0985</u> <b>Time</b> <u>1104</u> Custody Seals: <input checked="" type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact Coolant Location: <input type="checkbox"/> Dispensed / Top / Middle / Bottom Coolant Temperature Taken Via: <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input checked="" type="checkbox"/> None / Avg 2-3 containers Alternate Temperature Taken Via: <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container <div style="display: flex; justify-content: space-between;"> <div>Recorded °C: _____</div> <div>Correction Factor °C: _____</div> <div>Actual °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>1. <u>20.1</u></div> <div>2. <u>20.0</u></div> <div>3. <u>20.0</u></div> </div> <div style="display: flex; justify-content: space-between;"> <div>Average °C: _____</div> <div>Average °C: _____</div> <div>Average °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div><input type="checkbox"/> Cooler ID on COC?</div> <div><input type="checkbox"/> VQC Trip Blank received?</div> </div>		<b>Cooler #</b> _____ <b>Time</b> _____ Custody Seals: <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact Coolant Location: <input type="checkbox"/> Dispensed / Top / Middle / Bottom Coolant Temperature Taken Via: <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers Alternate Temperature Taken Via: <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container <div style="display: flex; justify-content: space-between;"> <div>Recorded °C: _____</div> <div>Correction Factor °C: _____</div> <div>Actual °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>1. _____</div> <div>2. _____</div> <div>3. _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Average °C: _____</div> <div>Average °C: _____</div> <div>Average °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div><input type="checkbox"/> Cooler ID on COC?</div> <div><input type="checkbox"/> VQC Trip Blank received?</div> </div>		<b>Cooler #</b> _____ <b>Time</b> _____ Custody Seals: <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact Coolant Location: <input type="checkbox"/> Dispensed / Top / Middle / Bottom Coolant Temperature Taken Via: <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers Alternate Temperature Taken Via: <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container <div style="display: flex; justify-content: space-between;"> <div>Recorded °C: _____</div> <div>Correction Factor °C: _____</div> <div>Actual °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>1. _____</div> <div>2. _____</div> <div>3. _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Average °C: _____</div> <div>Average °C: _____</div> <div>Average °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div><input type="checkbox"/> Cooler ID on COC?</div> <div><input type="checkbox"/> VQC Trip Blank received?</div> </div>		<b>Cooler #</b> _____ <b>Time</b> _____ Custody Seals: <input type="checkbox"/> None <input type="checkbox"/> Present / Intact <input type="checkbox"/> Present / Not Intact Coolant Location: <input type="checkbox"/> Dispensed / Top / Middle / Bottom Coolant Temperature Taken Via: <input type="checkbox"/> Loose Ice / Avg 2-3 containers <input type="checkbox"/> Bagged Ice / Avg 2-3 containers <input type="checkbox"/> Blue Ice / Avg 2-3 containers <input type="checkbox"/> None / Avg 2-3 containers Alternate Temperature Taken Via: <input type="checkbox"/> Temperature Blank (TB) <input type="checkbox"/> 1 Container <div style="display: flex; justify-content: space-between;"> <div>Recorded °C: _____</div> <div>Correction Factor °C: _____</div> <div>Actual °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> <div>Temp Blank: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>1. _____</div> <div>2. _____</div> <div>3. _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div>Average °C: _____</div> <div>Average °C: _____</div> <div>Average °C: _____</div> </div> <div style="display: flex; justify-content: space-between;"> <div><input type="checkbox"/> Cooler ID on COC?</div> <div><input type="checkbox"/> VQC Trip Blank received?</div> </div>	
<b>If any shaded areas checked, complete Sample Receiving Non-Conformance and/or Inventory Form</b>							
<b>Paperwork Received</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <input checked="" type="checkbox"/> Chain of Custody records? If No, Initiated By _____ Received for Lab Signed/Date/Time? _____ <input type="checkbox"/> Shipping document? <input type="checkbox"/> Other _____ <b>COC Information</b> <input checked="" type="checkbox"/> Trimatrix COC <input type="checkbox"/> Other _____ COC ID Numbers: <u>140371</u>			<b>Check Sample Preservation</b> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input checked="" type="checkbox"/> Average sample temperature < 6° C? <input checked="" type="checkbox"/> Was thermal preservation required? If "No", Project Chemist Approval Initials: _____ If "Yes" Completed Non-Con Cooler - Cont Inventory Form? <input checked="" type="checkbox"/> Completed Sample Preservation Verification Form? <input checked="" type="checkbox"/> Samples chemically preserved correctly? If "No", added orange tag? <input type="checkbox"/> Received pre-preserved VQC sybs? <input type="checkbox"/> NaOH <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub>				
<b>Check COC for Accuracy</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> Analysis Requested? <input checked="" type="checkbox"/> Sample ID matches COC? <input type="checkbox"/> Sample Date and Time matches COC? <input type="checkbox"/> Container type completed on COC? <input checked="" type="checkbox"/> All container types indicated are received?			<b>Check for Short Hold-Time Prep/Analyses</b> <input type="checkbox"/> Bacteriological <input type="checkbox"/> Air Bags <input type="checkbox"/> EnCoras / Methanol Pre-Preserved <input type="checkbox"/> Formaldehyde/Acidic <input type="checkbox"/> Green-tagged containers <input type="checkbox"/> Yellow/White-tagged 1L canisters (SV Prep-Lab) <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <b>AFTER HOURS ONLY:</b>          COPIES OF COC TO LAB AREA(S)  <input type="checkbox"/> NONE RECEIVED  <input checked="" type="checkbox"/> RECEIVED COCS TO LAB(S)       </div>				
<b>Sample Condition Summary</b> N/A <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> <input type="checkbox"/> Broken containers/lids? <input type="checkbox"/> Missing or incomplete labels? <input type="checkbox"/> Illegible information on labels? <input type="checkbox"/> Low volume received? <input type="checkbox"/> Inappropriate or non-Trimatrix containers received? <input type="checkbox"/> VQC was / TOX containers have heads on? <input type="checkbox"/> Extra capsule locations / containers not listed on COC?			<b>Notes</b> <input type="checkbox"/> Trip Blank received <input type="checkbox"/> Trip Blank not listed on COC Cooler Received (Date/Time): <u>3-14-12 1015</u> Paperwork Delivered (Date/Time): <u>3-14-12 1108</u> 24 Hour Goal Met? <u>Yes</u> / No				
Log in Form: Receiving Copies: Checklist							

revision: 3.4

**SAMPLE PRESERVATION VERIFICATION FORM**

page \_\_\_\_ of \_\_\_\_

Client: <b>Mosiac</b>	Work Order #: <b>1203194</b>
Receipt Log #: <b>5-6</b>	Project Chemist: <b>W 3-14-12</b>

COC ID: <b>140371</b>				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5/20	4	13		3	6	15				
Tag Color	Li. Blue	Blue	Brown		Green	Red	Red Stripes				
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>		None	HNO <sub>3</sub>	HNO <sub>3</sub>				
Expected pH	>12	<2	<2		5-8	<2	<2				
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Ph Strip Lot #
<input checked="" type="checkbox"/> <b>HC133115</b>
<input type="checkbox"/>

Aqueous Samples: For each sample and container type, check the box if pH is acceptable. If pH is not acceptable for any sample container, record pH in box, and note on Sample Receiving Checklist and on Sample Receiving Non-Conformance Form. If approved by Project Chemist, add acid or base to the sample to achieve the correct pH. Add up to, but do not exceed 2x the volume initially added at container prep (see table below for initial volumes used). Add orange pH tag to sample container and record information requested. Record adjusted pH on this form. Do not adjust pH for container types 3, 6, and 15.

COC ID: _____				Adjusted by: _____ Date: _____				DO NOT ADJUST pH FOR THESE CONTAINER TYPES			
Container Type	5	4	13		3	6	15				
Tag Color	Li. Blue	Blue	Brown		Green	Red	Red Stripes				
Preservative	NaOH	H <sub>2</sub> SO <sub>4</sub>	H <sub>2</sub> SO <sub>4</sub>		None	HNO <sub>3</sub>	HNO <sub>3</sub>				
Expected pH	>12	<2	<2		~7	<2	<2				
COC Line #1											
COC Line #2											
COC Line #3											
COC Line #4											
COC Line #5											
COC Line #6											
COC Line #7											
COC Line #8											
COC Line #9											
COC Line #10											

Container Size (mL)	Original Vol. of Preservative (mL)
Container Type 5	NaOH
500	2.5
1000	5.0
Container Type 4	H <sub>2</sub> SO <sub>4</sub>
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H <sub>2</sub> SO <sub>4</sub>
500	2.5

Comments
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March 12, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

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MAR 15 2012

Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for February 2012UIC BRANCH  
EPA, REGION 5

During the month of February, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 29 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 29 days this month.
- Cavity KCI 1060 was not in operation for this month.
- Cavity KCI 2030 was in operation for 29 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 29 days this month.
- Cavity KCI 2062 was not in operation for this month.

Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

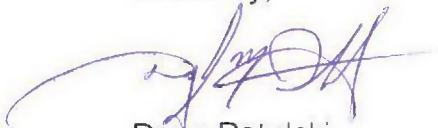


Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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MAR 15 2012

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EPA, REGION 5

CAVITY 1010

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MAR 15 2012

UIC BRANCH  
EPA, REGION 5

Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in
15-Feb-12	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in

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MAR 15 2012

UIC BRANCH  
EPA, REGION 5

CAVITY 1020

**RECEIVED**

MAR 15 2012

**UIC BRANCH**  
EPA, REGION 5

Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	1069	243	251
2-Feb-12	1036	262	270
3-Feb-12	1063	270	271
4-Feb-12	1105	273	262
5-Feb-12	1113	233	247
6-Feb-12	1081	271	274
7-Feb-12	1082	268	268
8-Feb-12	1104	294	301
9-Feb-12	1153	271	260
10-Feb-12	1153	202	195
11-Feb-12	1163	252	253
12-Feb-12	1170	250	264
13-Feb-12	1160	257	261
14-Feb-12	1154	292	292
15-Feb-12	1174	281	287
16-Feb-12	1161	303	307
17-Feb-12	1175	298	298
18-Feb-12	1161	290	294
19-Feb-12	1185	300	303
20-Feb-12	1160	323	327
21-Feb-12	1153	319	317
22-Feb-12	1171	326	324
23-Feb-12	1178	306	308
24-Feb-12	1146	313	315
25-Feb-12	1133	333	333
26-Feb-12	1139	319	317
27-Feb-12	1137	354	367
28-Feb-12	1143	367	362
29-Feb-12	1148	372	368

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MAR 15 2012

UIC BRANCH  
EPA, REGION 5

Cavity 1020

Feb-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1137	291	293

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
19-Feb-12	✓ 1185	300

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
2-Feb-12	1036	262

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
29-Feb-12	✓ 372	1148

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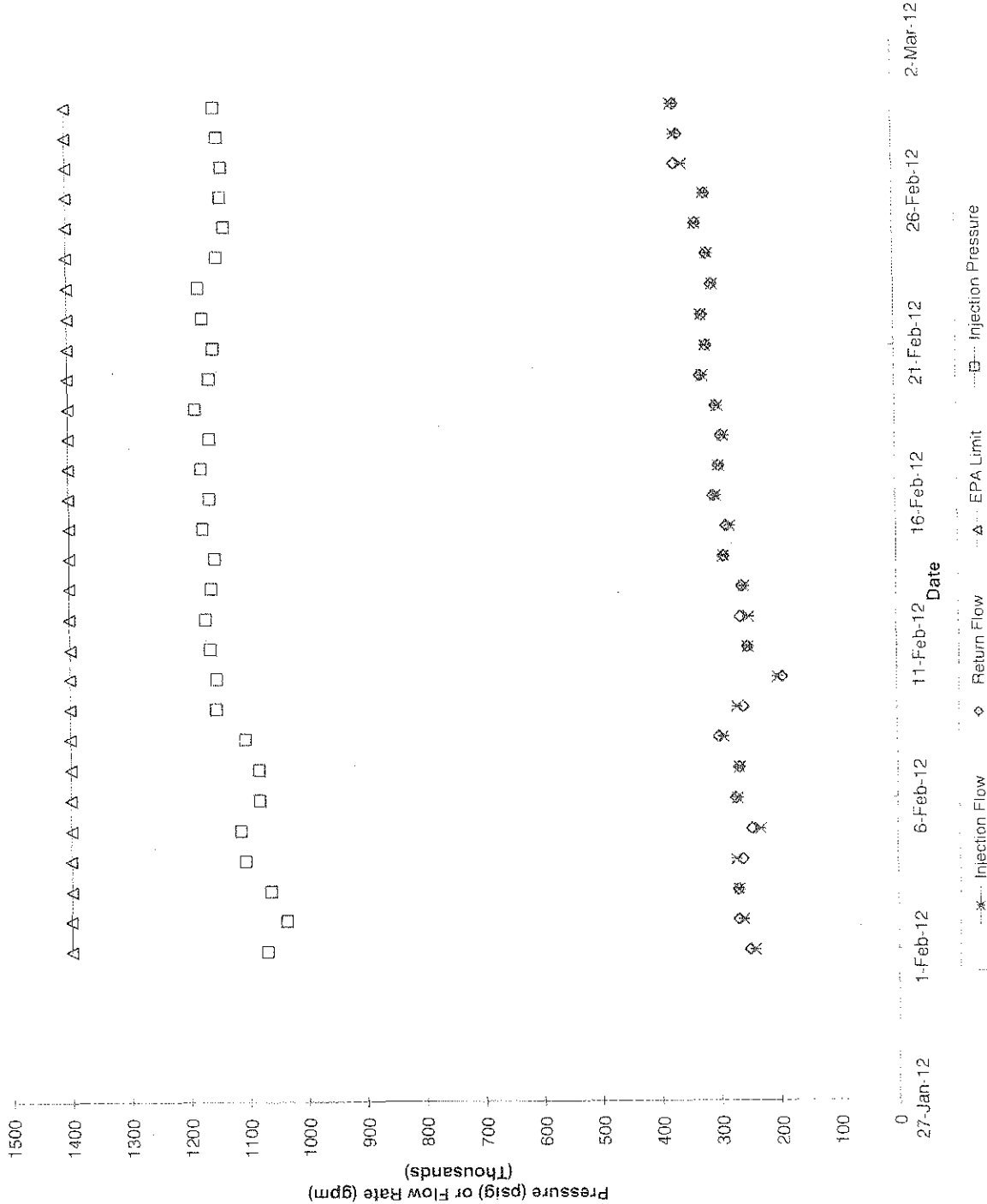
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Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



CAVITY 1040

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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in
15-Feb-12	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in

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CAVITY 1050

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	1193	158	158
2-Feb-12	1173	165	165
3-Feb-12	1183	166	166
4-Feb-12	1200	162	162
5-Feb-12	1194	145	145
6-Feb-12	1175	179	179
7-Feb-12	1150	170	170
8-Feb-12	1168	185	185
9-Feb-12	1198	177	177
10-Feb-12	1160	116	116
11-Feb-12	1173	162	162
12-Feb-12	1187	176	176
13-Feb-12	1200	175	175
14-Feb-12	1194	180	180
15-Feb-12	1200	159	159
16-Feb-12	1230	179	179
17-Feb-12	1202	181	181
18-Feb-12	1200	184	184
19-Feb-12	1225	193	193
20-Feb-12	1180	177	177
21-Feb-12	1193	181	181
22-Feb-12	1211	182	182
23-Feb-12	1230	180	180
24-Feb-12	1170	176	176
25-Feb-12	1173	186	186
26-Feb-12	1180	186	186
27-Feb-12	1192	173	173
28-Feb-12	1205	181	181
29-Feb-12	1133	189	189

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Cavity 1050

**UIC BRANCH**  
EPA, REGION 5

Feb-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1189	173	173

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
16-Feb-12	1230	179

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
29-Feb-12	1133	189

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
19-Feb-12	193	1225

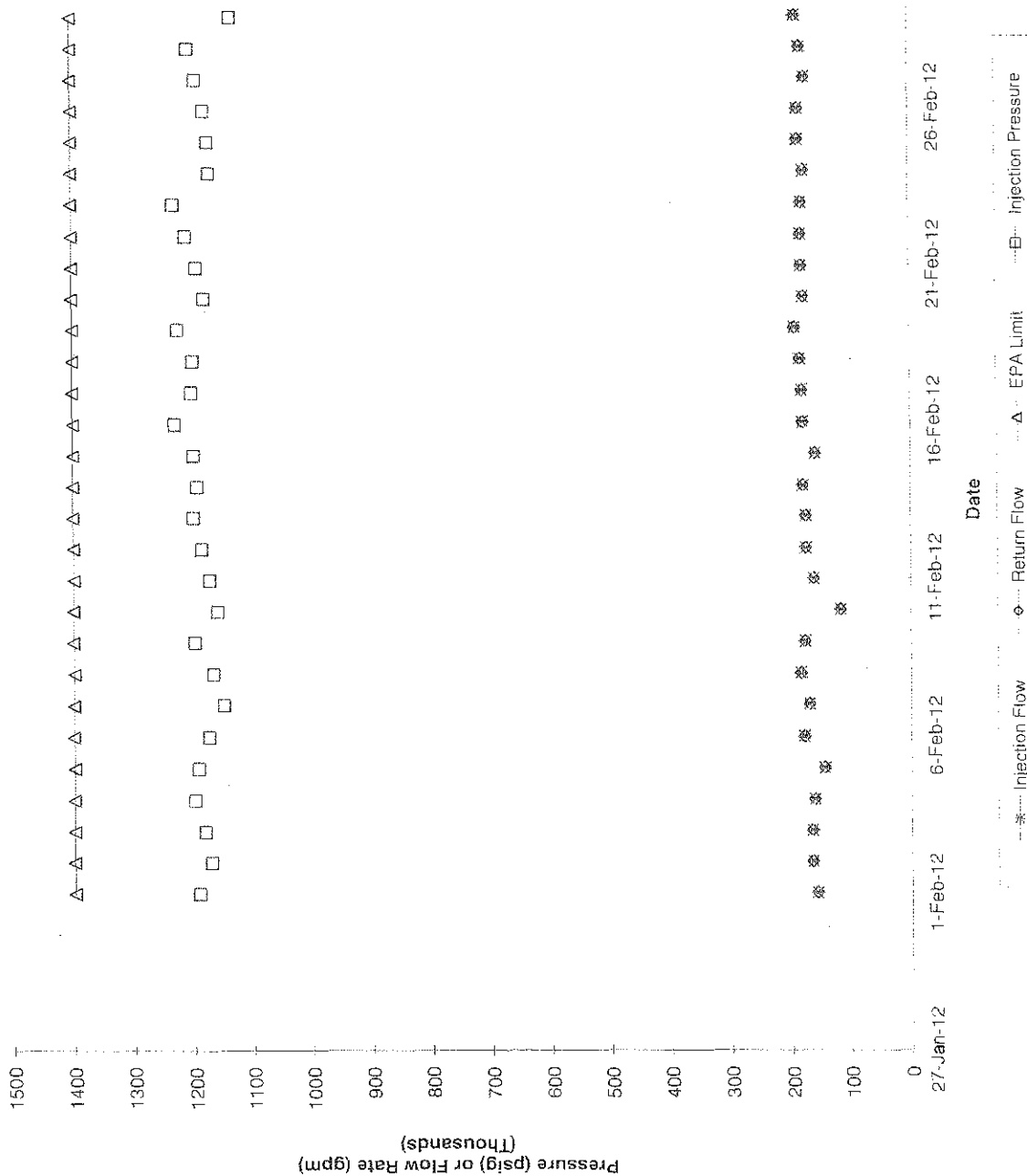
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Cavity 1050 Pressures & Flow Rates



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Cavity 1060

Daily Averages

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Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in
15-Feb-12	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in

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CAVITY 2030



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Cavity 2030

Daily Averages

UIC BRANCH  
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Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	1193	304	304
2-Feb-12	1173	308	308
3-Feb-12	1183	313	313
4-Feb-12	1200	295	295
5-Feb-12	1194	280	280
6-Feb-12	1175	251	251
7-Feb-12	1150	268	268
8-Feb-12	1168	297	297
9-Feb-12	1198	258	258
10-Feb-12	1160	176	176
11-Feb-12	1173	238	238
12-Feb-12	1187	243	243
13-Feb-12	1200	245	245
14-Feb-12	1194	300	300
15-Feb-12	1200	257	257
16-Feb-12	1230	275	275
17-Feb-12	1202	259	259
18-Feb-12	1200	258	258
19-Feb-12	1194	253	253
20-Feb-12	1180	281	281
21-Feb-12	1193	296	296
22-Feb-12	1211	306	306
23-Feb-12	1230	298	298
24-Feb-12	1170	297	297
25-Feb-12	1173	290	290
26-Feb-12	1180	277	277
27-Feb-12	1192	271	271
28-Feb-12	1205	327	327
29-Feb-12	1133	290	290

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Cavity 2030

UIC BRANCH  
EPA, REGION 5

Feb-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1188	276	276

✓ Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
16-Feb-12	✓ 1230	275

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
29-Feb-12	1133	290

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
28-Feb-12	✓ 327	1205

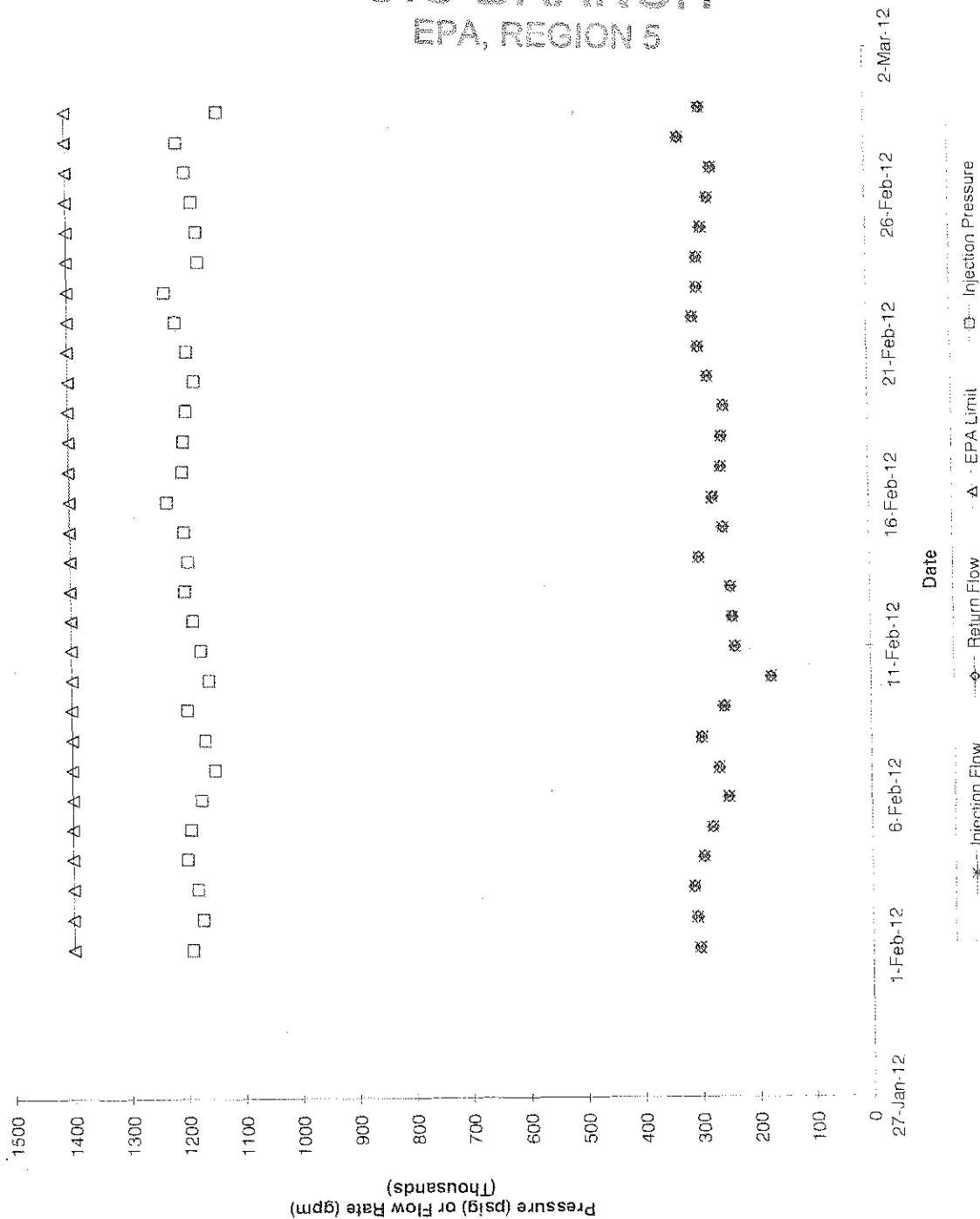
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Cavity 2030 Pressures & Flow Rates



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UIC BRANCH  
EPA, REGION 5

CAVITY 2040

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Cavity 2040

UIC BRANCH  
EPA, REGION 5

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in
15-Feb-12	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in

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UIC BRANCH  
EPA, REGION 5

CAVITY 2061

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Cavity 2061

Daily Averages

UIC BRANCH  
EPA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	1193	117	117
2-Feb-12	1173	123	123
3-Feb-12	1183	114	114
4-Feb-12	1200	98	98
5-Feb-12	1194	92	92
6-Feb-12	1175	107	107
7-Feb-12	1150	89	89
8-Feb-12	1168	108	108
9-Feb-12	1198	135	135
10-Feb-12	1160	86	86
11-Feb-12	1173	158	158
12-Feb-12	1187	306	306
13-Feb-12	1200	130	130
14-Feb-12	1194	137	137
15-Feb-12	1200	125	125
16-Feb-12	1230	122	122
17-Feb-12	1202	115	115
18-Feb-12	1200	257	257
19-Feb-12	1194	119	119
20-Feb-12	1180	120	120
21-Feb-12	1193	124	124
22-Feb-12	1211	116	116
23-Feb-12	1230	107	107
24-Feb-12	1170	136	136
25-Feb-12	1173	128	128
26-Feb-12	1180	108	108
27-Feb-12	1192	159	159
28-Feb-12	1205	137	137
29-Feb-12	1133	117	117

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Cavity 2061

UIC BRANCH  
EPA, REGION 5

Feb-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1188	131	131

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
16-Feb-12	1230	122

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
29-Feb-12	1133	117

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
12-Feb-12	306	1187



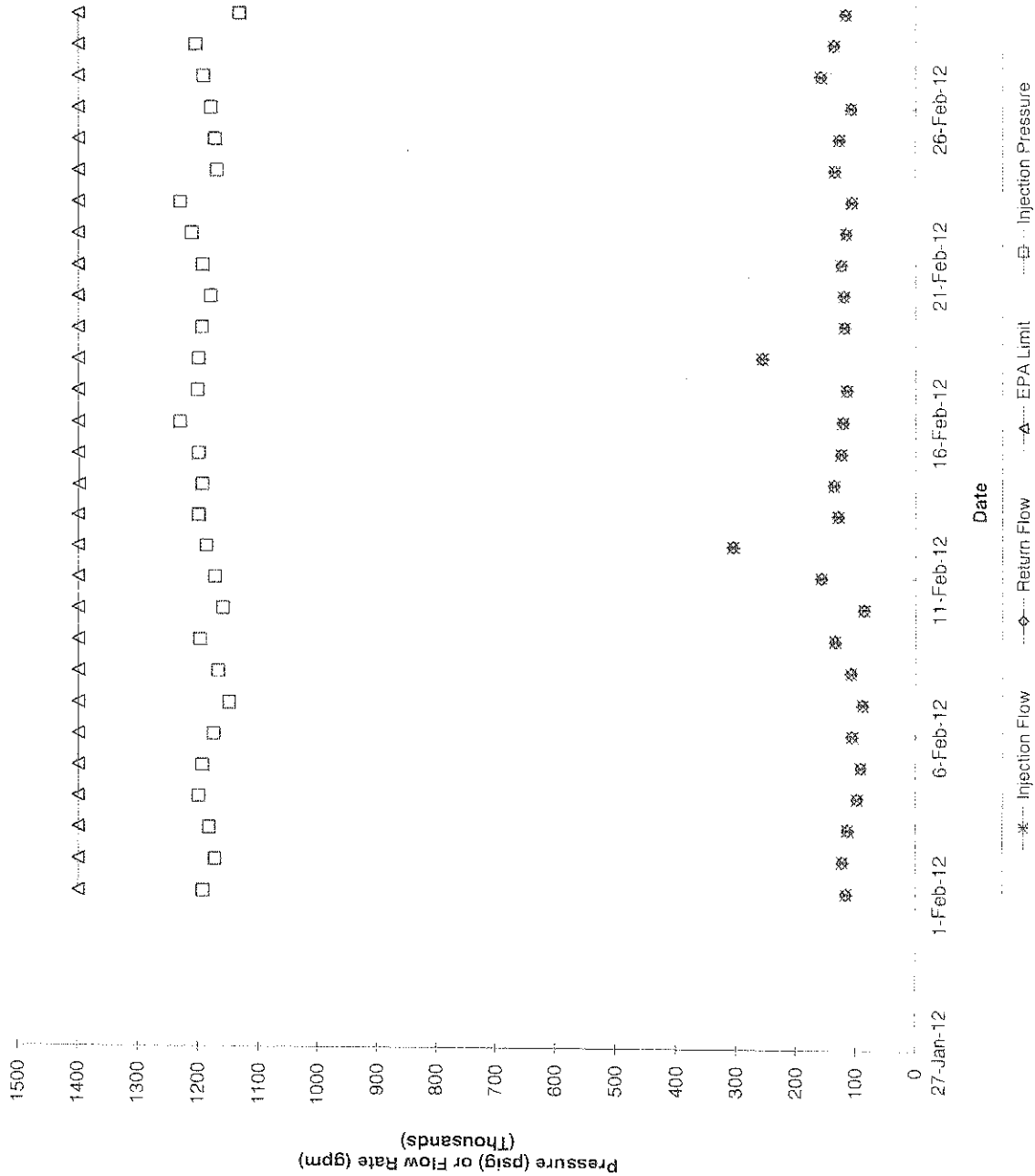
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Cavity 2061 Pressures & Flow Rates



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UIC BRANCH  
EPA, REGION 5

CAVITY 2062

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Cavity 2062

Daily Averages

UIC BRANCH  
EPA, REGION 5

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Feb-12	shut in	shut in	shut in
2-Feb-12	shut in	shut in	shut in
3-Feb-12	shut in	shut in	shut in
4-Feb-12	shut in	shut in	shut in
5-Feb-12	shut in	shut in	shut in
6-Feb-12	shut in	shut in	shut in
7-Feb-12	shut in	shut in	shut in
8-Feb-12	shut in	shut in	shut in
9-Feb-12	shut in	shut in	shut in
10-Feb-12	shut in	shut in	shut in
11-Feb-12	shut in	shut in	shut in
12-Feb-12	shut in	shut in	shut in
13-Feb-12	shut in	shut in	shut in
14-Feb-12	shut in	shut in	shut in
15-Feb-12	shut in	shut in	shut in
16-Feb-12	shut in	shut in	shut in
17-Feb-12	shut in	shut in	shut in
18-Feb-12	shut in	shut in	shut in
19-Feb-12	shut in	shut in	shut in
20-Feb-12	shut in	shut in	shut in
21-Feb-12	shut in	shut in	shut in
22-Feb-12	shut in	shut in	shut in
23-Feb-12	shut in	shut in	shut in
24-Feb-12	shut in	shut in	shut in
25-Feb-12	shut in	shut in	shut in
26-Feb-12	shut in	shut in	shut in
27-Feb-12	shut in	shut in	shut in
28-Feb-12	shut in	shut in	shut in
29-Feb-12	shut in	shut in	shut in



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

March 12, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

Subj: Class I - Non-Hazardous Disposal Well  
Monthly Report for February 2012  
Permit No: MI-133-11-001

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Attached are the injection pressure, flowrate and annulus pressure records and cumulative volumes for the Woodward 1 – 26 disposal well. The daily minimum differentials are also included as a separate table. The annulus system is a closed system. Annulus fluid losses are attached. During the month no waste streams other than those identified in Part III (F) of the permit were injected into the well.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Please call me at (231) 832-8800 if you have any questions.

Sincerely,

Doug Patulski  
Minefield Superintendent  
Attachments

Karl Tomaszewski  
Site Manager

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## Woodward 1-26 Disposal Well

MAR 16 2012

Feb-12 Maximum values for injection pressure with corresponding values for flow rates and annulus pressure.

UIC BRANCH  
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Date	Injection Pressure (psi)	Injection Flow (gpm)	Annulus Pressure (psi)
1-Feb-12	665	112	1683
2-Feb-12	669	117	1381
3-Feb-12	680	115	1675
4-Feb-12	717	126	1625
5-Feb-12	715	131	1265
6-Feb-12	715	120	1678
7-Feb-12	690	112	1638
8-Feb-12	747	132	1284
9-Feb-12	675	103	1691
10-Feb-12	653	149	1660
11-Feb-12	678	102	1705
12-Feb-12	674	105	1714
13-Feb-12	689	128	1450
14-Feb-12	660	119	1722
15-Feb-12	676	111	1325
16-Feb-12	695	140	1433
17-Feb-12	709	142	1348
18-Feb-12	696	119	1705
19-Feb-12	682	107	1304
20-Feb-12	674	112	1349
21-Feb-12	703	129	1634
22-Feb-12	668	116	1616
23-Feb-12	662	114	1755
24-Feb-12	663	105	1698
25-Feb-12	678	111	1652
26-Feb-12	715	129	1210
27-Feb-12	749	158	1379
28-Feb-12	644	109	1224
29-Feb-12	669	120	1573

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MAR 15 2012

## Woodward 1-26 Disposal Well

Feb-12 Minimum values for injection pressure with corresponding values for flow rates and annulus pressure.

UIC BRANCH  
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Date	Injection Pressure (psi)	Injection Flow (gpm)	Annulus Pressure (psi)
1-Feb-12	581	121	1326
2-Feb-12	621	122	1400
3-Feb-12	589	110	1528
4-Feb-12	666	109	1317
5-Feb-12	632	117	1640
6-Feb-12	648	139	1316
7-Feb-12	659	131	1348
8-Feb-12	652	119	1530
9-Feb-12	627	103	1398
10-Feb-12	599	120	1618
11-Feb-12	655	113	1429
12-Feb-12	635	108	1709
13-Feb-12	636	109	1504
14-Feb-12	635	106	1553
15-Feb-12	654	118	1733
16-Feb-12	661	121	1349
17-Feb-12	642	116	1717
18-Feb-12	658	102	1361
19-Feb-12	656	111	1592
20-Feb-12	630	130	1834
21-Feb-12	525	129	1480
22-Feb-12	623	116	1516
23-Feb-12	629	112	1339
24-Feb-12	618	122	1220
25-Feb-12	653	100	1638
26-Feb-12	671	135	1697
27-Feb-12	602	95	1513
28-Feb-12	605	103	1201
29-Feb-12	605	101	1716

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## Woodward 1-26 Disposal Well

MAR 15 2012

Feb-12 Minimum Differential Pressures between simultaneous measurements of injection pressure and annulus pressure. (Minimum Differential Pressure Allowed: 100 psi)

UIC BRANCH  
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Date	Annulus Pressure (psi)	Injection Pressure (psi)	Minimum Differential Pressure (psi)
1-Feb-12	1267	655	612
2-Feb-12	1306	625	681
3-Feb-12	1507	678	829
4-Feb-12	1317	666	651
5-Feb-12	1265	715	550
6-Feb-12	1325	661	664
7-Feb-12	1348	659	689
8-Feb-12	1284	747	537
9-Feb-12	1292	659	633
10-Feb-12	1488	635	853
11-Feb-12	1246	675	571
12-Feb-12	1583	644	939
13-Feb-12	1450	689	761
14-Feb-12	1283	649	634
15-Feb-12	1325	676	649
16-Feb-12	1293	668	625
17-Feb-12	1348	709	639
18-Feb-12	1279	675	604
19-Feb-12	1304	682	622
20-Feb-12	1266	674	592
21-Feb-12	1310	656	654
22-Feb-12	1499	653	846
23-Feb-12	1273	640	633
24-Feb-12	1220	618	602
25-Feb-12	1211	667	544
26-Feb-12	1210	715	* 495
27-Feb-12	1176	665	511
28-Feb-12	1224	644	NA
29-Feb-12	1425	668	NA

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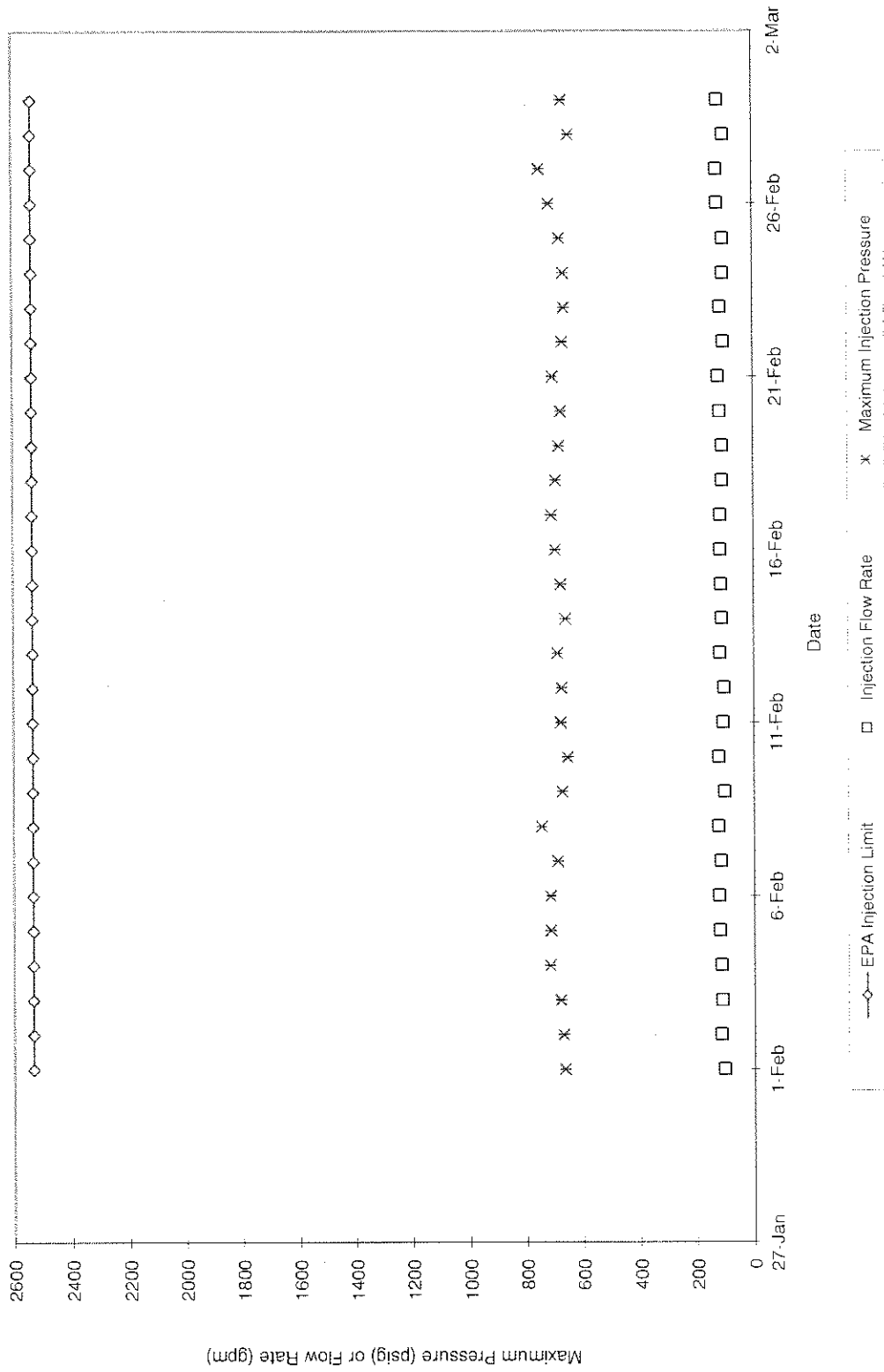
Woodward 1-26 Disposal Well

Cumulative Volume (Gallons)

Disposal through	Jan-12	3,212,022,631
Disposal in	Feb-12	<u>4,786,944</u>
Cumulative volume through	29-Feb-12	3,216,809,575



# Woodward 1-26 Disposal Well



Woodward 1-26

## Disposal Well Annulus Additions

2012-2015

Date \_\_\_\_\_

Gallons

### Type of Liquid

## Cumulative Volume

## Comments

2012 - January

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none

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2012 - February

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none

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Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

March 12, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

Subj: Class I - Non-Hazardous Disposal Well  
Monthly Report for February 2012  
Permit No: MI-133-11-002

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Attached are the injection pressure, flowrate and annulus pressure records and cumulative volumes for the Thomas 1 - 26 disposal well. The daily minimum differentials are also included as a separate table. The annulus system is a closed system. Annulus fluid losses are attached. During the month no waste streams other than those identified in Part III (F) of the permit were injected into the well.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Please call me at (231) 832-8800 if you have any questions.

Sincerely,

Doug Patulski  
Minefield Superintendent

Karl Tomaszewski  
Site Manager

Attachments

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## Thomas 1-26 Disposal Well

MAR 15 2012

Feb-12 Maximum values for injection pressure with corresponding values for flow rates and annulus pressure.

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Date	Injection Pressure (psi)	Injection Flow (gpm)	Annulus Pressure (psi)
1-Feb-12	682	417	1389
2-Feb-12	685	428	1397
3-Feb-12	700	415	1384
4-Feb-12	735	464	1470
5-Feb-12	728	452	1400
6-Feb-12	730	446	1575
7-Feb-12	703	425	1609
8-Feb-12	761	494	1621
9-Feb-12	688	382	1619
10-Feb-12	687	410	1645
11-Feb-12	688	400	1497
12-Feb-12	686	400	1582
13-Feb-12	705	456	1430
14-Feb-12	673	458	1186
15-Feb-12	692	430	1459
16-Feb-12	709	476	1453
17-Feb-12	725	484	1399
18-Feb-12	707	430	1598
19-Feb-12	694	408	1556
20-Feb-12	686	398	1232
21-Feb-12	718	467	1596
22-Feb-12	684	411	1414
23-Feb-12	675	430	1501
24-Feb-12	677	373	1623
25-Feb-12	687	399	1330
26-Feb-12	731	453	1292
27-Feb-12	✓ 764	✓ 537	1226
28-Feb-12	656	404	1313
29-Feb-12	684	449	1384

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## Thomas 1-26 Disposal Well

MAR 15 2012

Feb-12 Minimum values for injection pressure with corresponding values  
for flow rates and annulus pressure.

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Date	Injection Pressure (psi)	Injection Flow (gpm)	Annulus Pressure (psi)
1-Feb-12	600	449	1500
2-Feb-12	640	446	1275
3-Feb-12	633	436	1357
4-Feb-12	680	380	1417
5-Feb-12	650	381	1268
6-Feb-12	665	471	1600
7-Feb-12	675	459	1349
8-Feb-12	667	430	1405
9-Feb-12	640	451	1405
10-Feb-12	609	435	1552
11-Feb-12	563	404	1276
12-Feb-12	647	420	1588
13-Feb-12	649	412	1508
14-Feb-12	651	396	1595
15-Feb-12	680	438	1259
16-Feb-12	675	423	1249
17-Feb-12	657	390	1520
18-Feb-12	667	395	1322
19-Feb-12	668	394	1265
20-Feb-12	649	463	1568
21-Feb-12	541	489	1442
22-Feb-12	637	387	1335
23-Feb-12	645	412	1417
24-Feb-12	631	416	1313
25-Feb-12	667	375	1530
26-Feb-12	684	434	1614
27-Feb-12	611	471	1601
28-Feb-12	618	342	1600
29-Feb-12	619	375	1596

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## Thomas 1-26 Disposal Well

MAR 15 2012

Feb-12 Minimum Differential Pressures between simultaneous measurements of injection pressure and annulus pressure. (Minimum Differential Pressure Allowed: 100 psi)

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Date	Annulus Pressure (psi)	Injection Pressure (psi)	Minimum Differential Pressure (psi)
1-Feb-12	1181	673	508
2-Feb-12	1275	640	635
3-Feb-12	1384	700	684
4-Feb-12	1470	735	735
5-Feb-12	1200	725	475
6-Feb-12	1296	703	593
7-Feb-12	1349	675	674
8-Feb-12	1171	731	440
9-Feb-12	1208	673	535
10-Feb-12	1552	609	943
11-Feb-12	1363	666	697
12-Feb-12	1372	657	715
13-Feb-12	1430	705	725
14-Feb-12	1186	673	513
15-Feb-12	1259	680	579
16-Feb-12	1249	675	574
17-Feb-12	1399	725	674
18-Feb-12	1164	688	476
19-Feb-12	1142	691	451
20-Feb-12	1163	680	483
21-Feb-12	1324	710	614
22-Feb-12	1335	637	698
23-Feb-12	1233	672	561
24-Feb-12	1151	672	479
25-Feb-12	1154	678	476
26-Feb-12	1238	706	532
27-Feb-12	1226	764	462
28-Feb-12	1313	656	657
29-Feb-12	1333	681	652

Thomas 1-26 Disposal Well  
Cumulative Volume (Gallons)

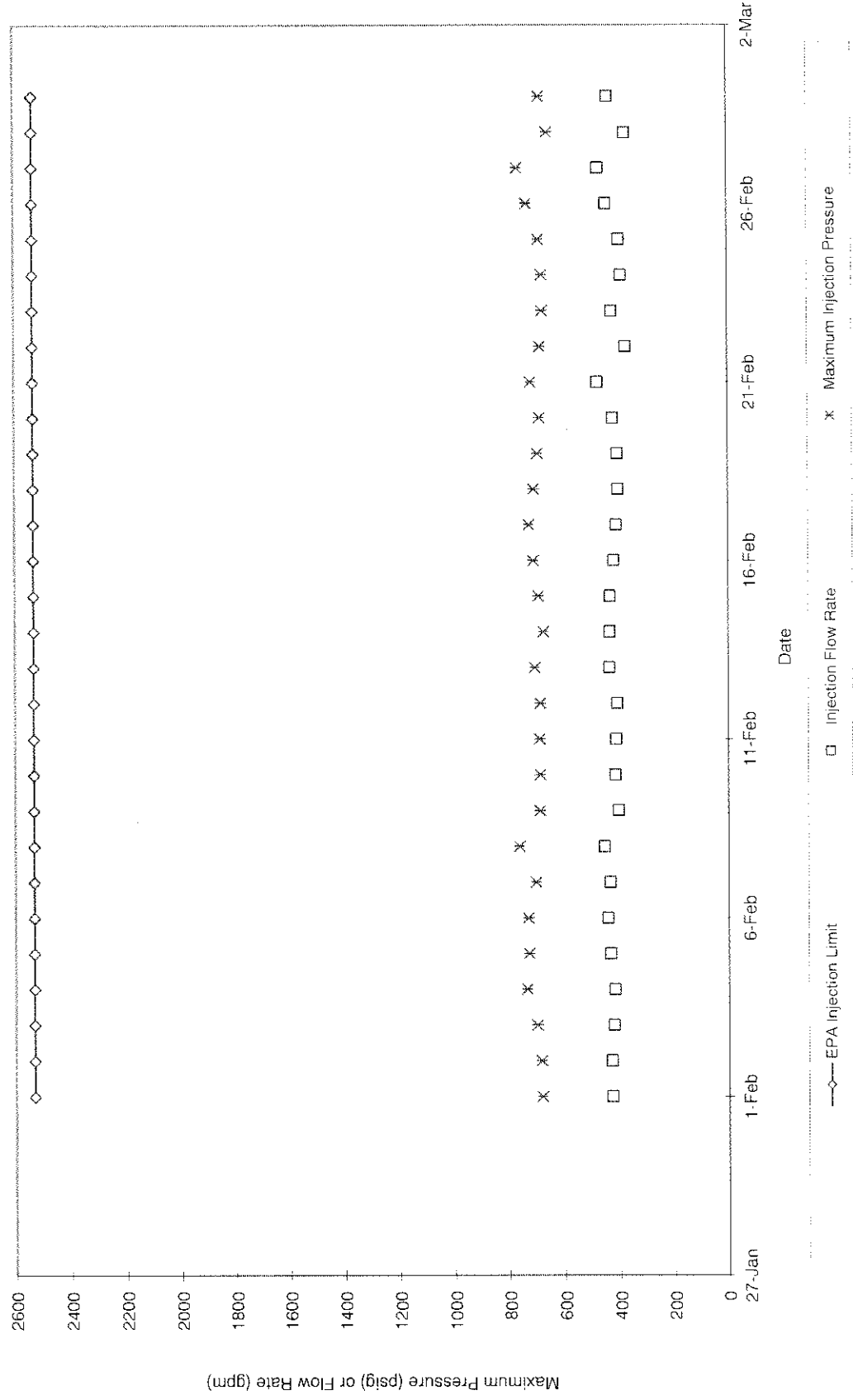
Disposal through	Jan-12	3,564,600,967
Disposal in	Feb-12	<u>17,648,016</u>
Cumulative volume through	29-Feb-12	3,582,248,983

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# Thomas 1-26 Disposal Well





## Disposal Well Annulus Additions

[illegible]



Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

February 13, 2012

United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for January 2012

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During the month of January, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 7 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 30 days this month.
- Cavity KCI 1060 was in operation for 25 days this month.
- Cavity KCI 2030 was in operation for 31 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 28 days this month.
- Cavity KCI 2062 was not in operation for this month.

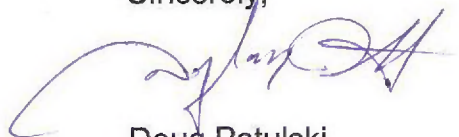
Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

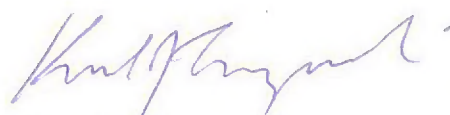
1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

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CAVITY 1010

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in

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CAVITY 1020

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in
20-Jan-12	1055	339	336
21-Jan-12	1058	320	319
22-Jan-12	1088	317	299
23-Jan-12	1170	289	284
24-Jan-12	1188	80	144
25-Jan-12	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in
30-Jan-12	1110	233	261
31-Jan-12	1081	243	257

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Cavity 1020

Jan-12  
Monthly Averages

Injection Pressure (psi)  
1107

Injection Flow (gpm)  
260

Return Flow (gpm)  
271

Maximum Injection Pressure and corresponding Injection Flow

Date  
24-Jan-12

Injection Pressure (psi)  
1188

Injection Flow (gpm)  
80

Minimum Injection Pressure and corresponding Injection Flow

Date  
20-Jan-12

Injection Pressure (psi)  
1055

Injection Flow (gpm)  
339

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
20-Jan-12

Injection Flow (gpm)  
339

Injection Pressure (psi)  
1055

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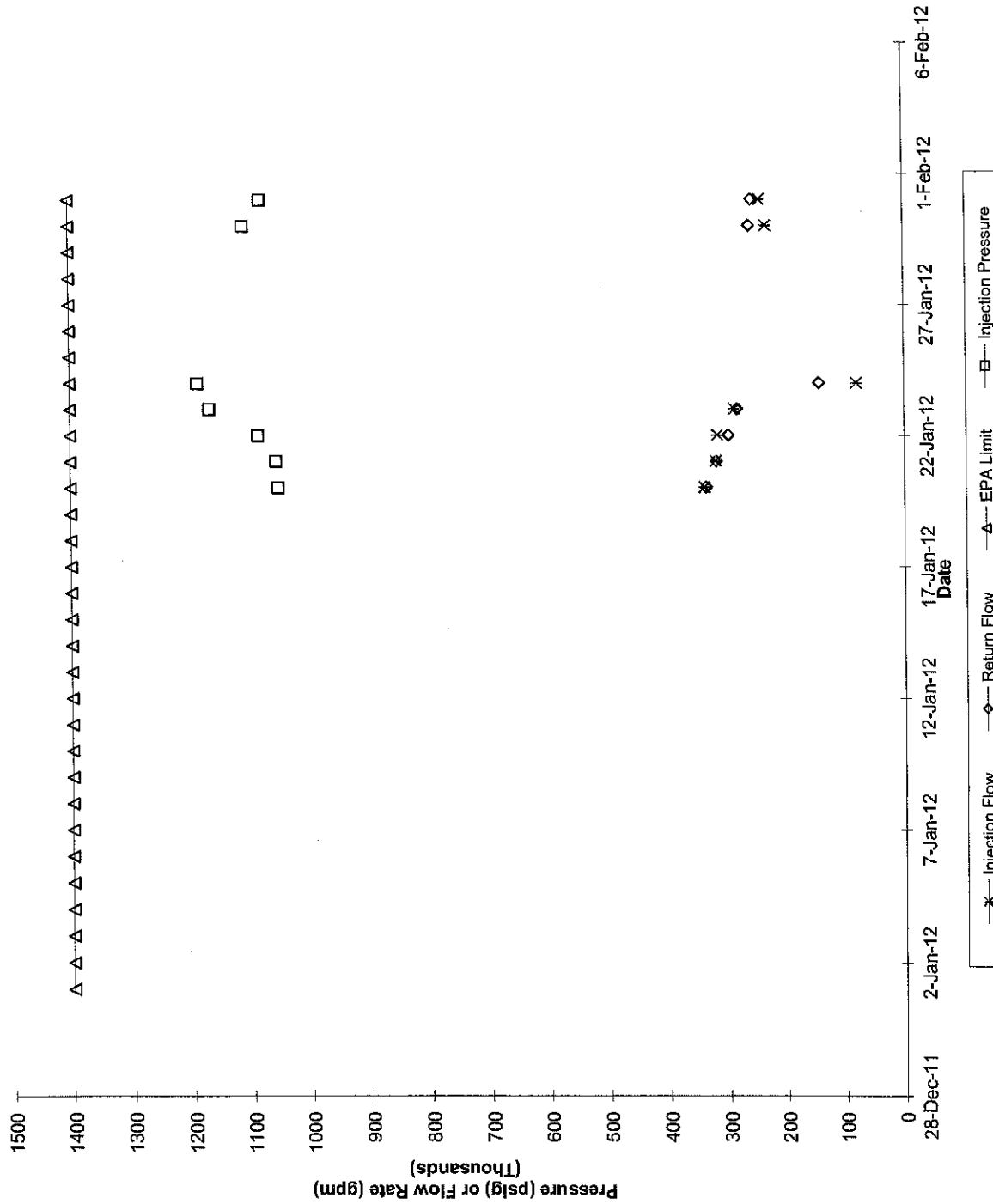
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



CAVITY 1040

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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in

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CAVITY 1050

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	1190	164	164
2-Jan-12	1205	188	188
3-Jan-12	1200	189	189
4-Jan-12	1200	200	200
5-Jan-12	1200	184	184
6-Jan-12	1214	165	165
7-Jan-12	1200	153	153
8-Jan-12	1227	193	193
9-Jan-12	1213	183	183
10-Jan-12	1213	164	164
11-Jan-12	1208	150	150
12-Jan-12	1225	199	199
13-Jan-12	1200	180	180
14-Jan-12	1200	179	179
15-Jan-12	1183	150	150
16-Jan-12	1197	193	193
17-Jan-12	1221	178	178
18-Jan-12	1180	67	67
19-Jan-12	shut in	shut in	shut in
20-Jan-12	1188	194	194
21-Jan-12	1225	188	188
22-Jan-12	1204	183	183
23-Jan-12	1220	197	197
24-Jan-12	1210	141	141
25-Jan-12	1200	197	197
26-Jan-12	1225	197	197
27-Jan-12	1195	179	179
28-Jan-12	1210	171	171
29-Jan-12	1203	189	189
30-Jan-12	1175	190	190
31-Jan-12	1206	152	152

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Cavity 1050

Jan-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1205	175	175

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
8-Jan-12	1227	193

Minimum Injection Pressure and corresponding Injection Flow

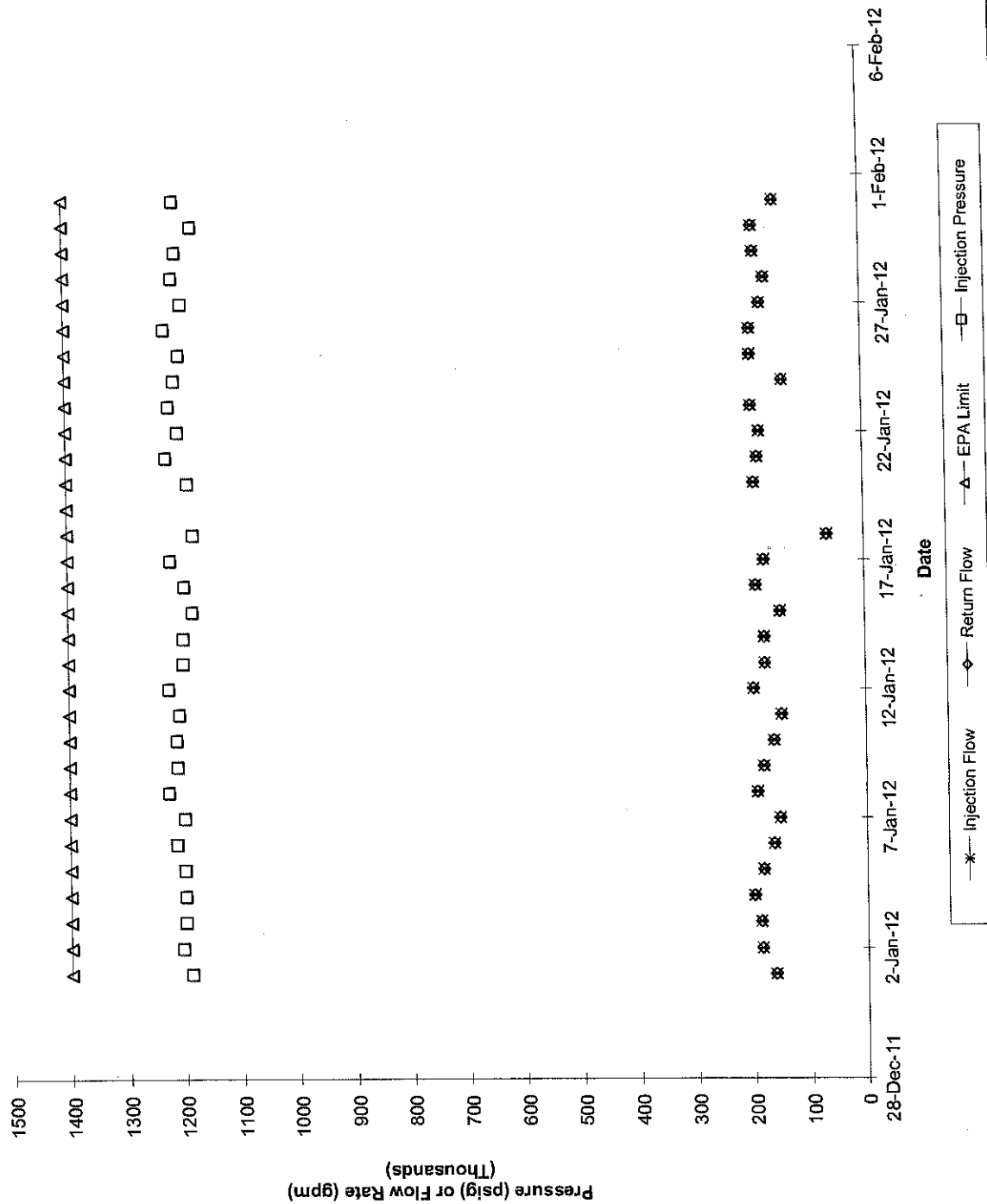
Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Jan-12	1175	190

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
4-Jan-12	200	1200

# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	1153	347	351
2-Jan-12	1123	340	360
3-Jan-12	1131	333	356
4-Jan-12	1151	347	329
5-Jan-12	1153	347	341
6-Jan-12	1161	354	379
7-Jan-12	1150	333	350
8-Jan-12	1150	375	390
9-Jan-12	1152	361	370
10-Jan-12	1162	375	378
11-Jan-12	1165	368	381
12-Jan-12	1170	382	394
13-Jan-12	1154	340	350
14-Jan-12	1154	368	374
15-Jan-12	1158	361	369
16-Jan-12	1170	375	379
17-Jan-12	1168	361	366
18-Jan-12	1170	361	373
19-Jan-12	1149	347	372
20-Jan-12	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in
24-Jan-12	1141	396	415
25-Jan-12	1140	347	369
26-Jan-12	1133	389	369
27-Jan-12	1156	333	363
28-Jan-12	1157	368	370
29-Jan-12	1146	361	371
30-Jan-12	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in

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Cavity 1060 ✓

Jan-12 ✓  
Monthly Averages

Injection Pressure  
1153

Injection Flow  
359

Return Flow  
369

Maximum Injection Pressure and corresponding Injection Flow

Date  
12-Jan-12

Injection Pressure  
1170 ✓

Injection Flow  
382

Minimum Injection Pressure and corresponding Injection Flow

Date  
2-Jan-12

Injection Pressure  
1123  
X c.m.

Injection Flow  
340

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
24-Jan-12

✓ Injection Flow  
396

Injection Pressure  
1141

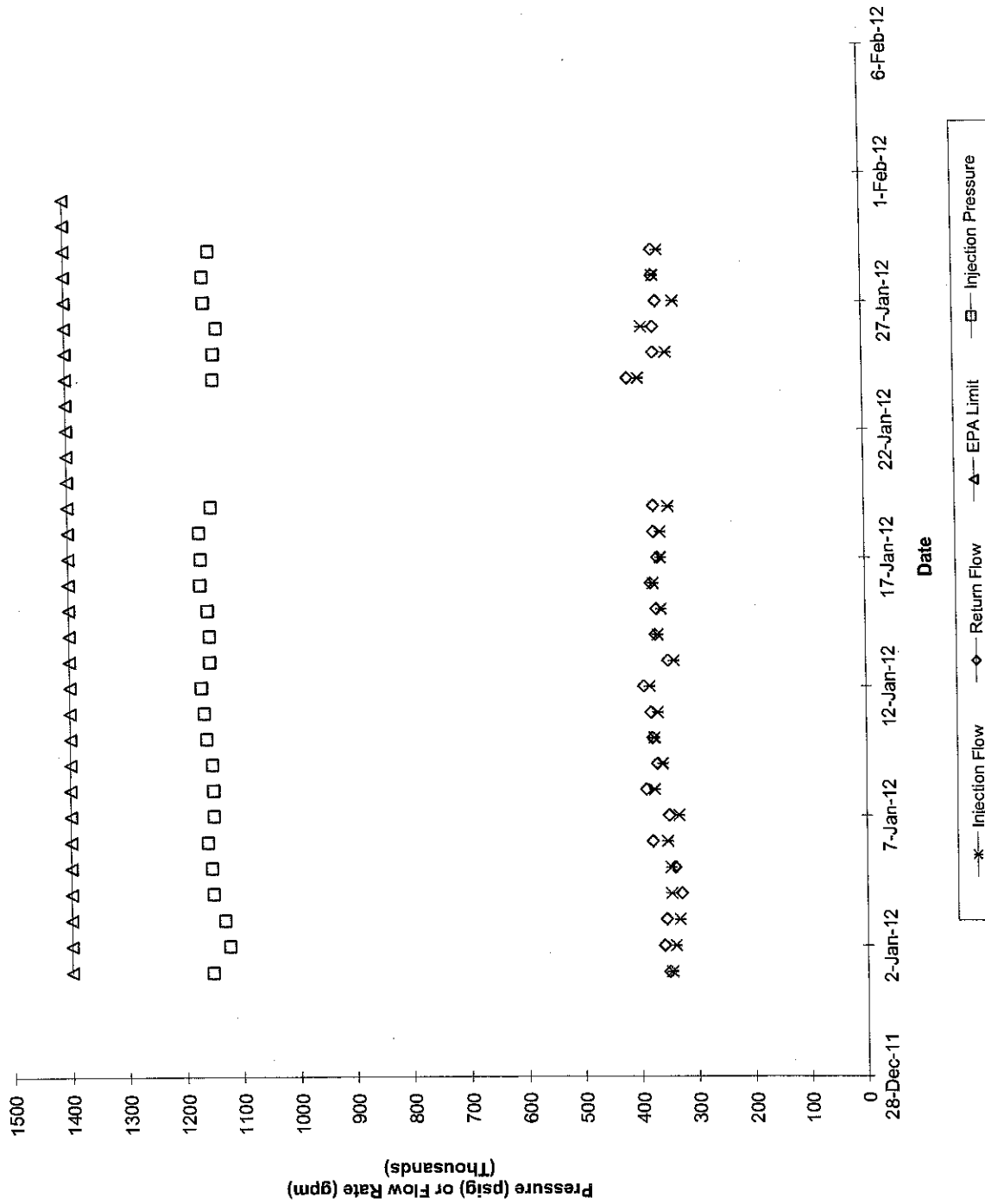
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# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



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Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	1190	274	274
2-Jan-12	1205	250	250
3-Jan-12	1200	250	250
4-Jan-12	1200	254	254
5-Jan-12	1200	277	277
6-Jan-12	1214	274	274
7-Jan-12	1200	250	250
8-Jan-12	1227	274	274
9-Jan-12	1213	237	237
10-Jan-12	1213	255	255
11-Jan-12	1208	257	257
12-Jan-12	1225	263	263
13-Jan-12	1200	174	174
14-Jan-12	1200	233	233
15-Jan-12	1183	242	242
16-Jan-12	1197	253	253
17-Jan-12	1221	273	273
18-Jan-12	1210	268	268
19-Jan-12	1208	319	319
20-Jan-12	1188	260	260
21-Jan-12	1225	235	235
22-Jan-12	1204	264	264
23-Jan-12	1220	250	250
24-Jan-12	1210	269	269
25-Jan-12	1200	233	233
26-Jan-12	1211	233	233
27-Jan-12	1195	280	280
28-Jan-12	1210	278	278
29-Jan-12	1203	304	304
30-Jan-12	1175	250	250
31-Jan-12	1206	297	297

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Cavity 2030

Jan-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1205	259	259

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
8-Jan-12	1227	274

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Jan-12	1175	250

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
19-Jan-12	319	1208

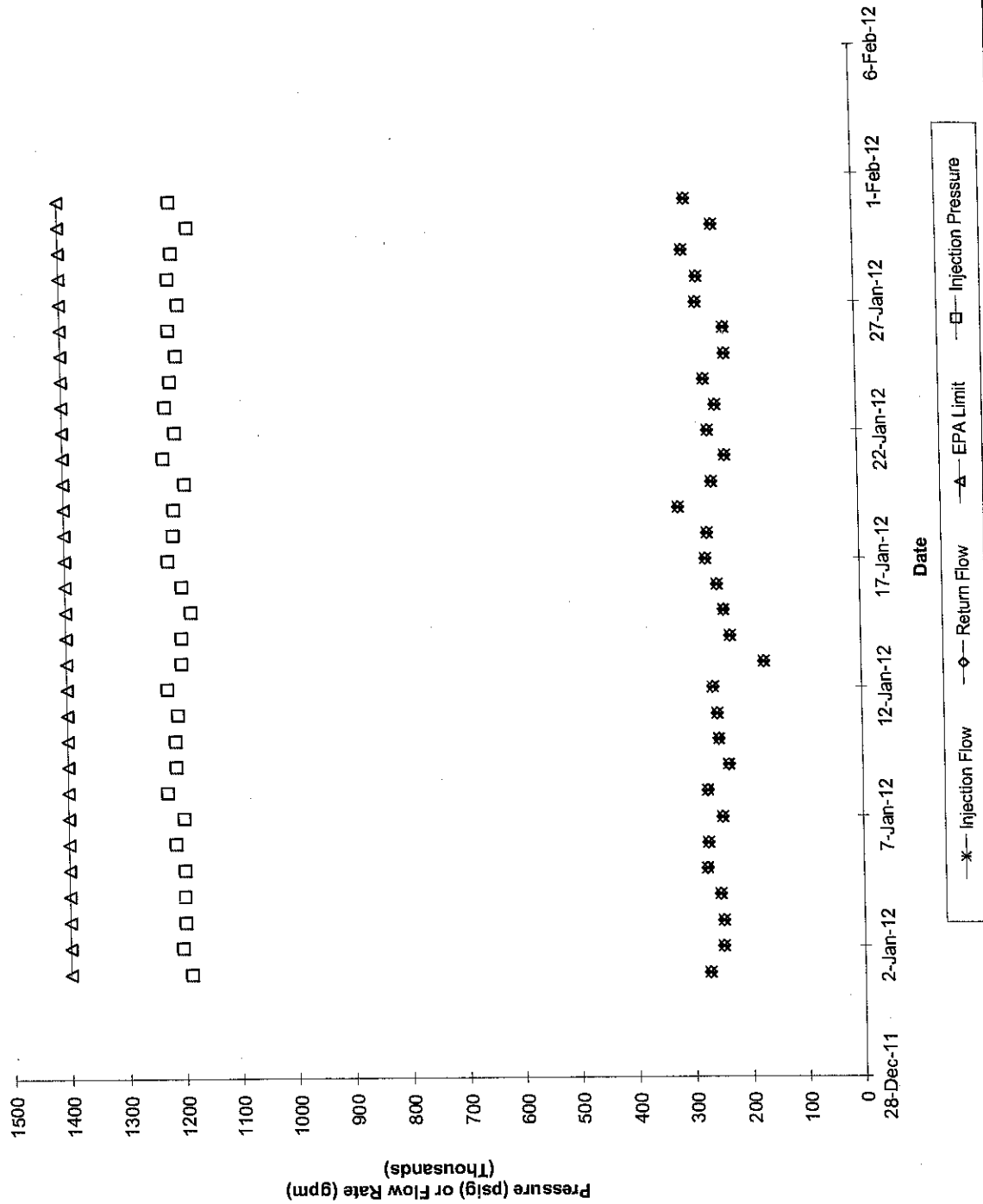
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



CAVITY 2040

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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in

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CAVITY 2061

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Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	1190	176	176
2-Jan-12	1205	166	166
3-Jan-12	1200	158	158
4-Jan-12	1200	167	167
5-Jan-12	1200	173	173
6-Jan-12	1214	149	149
7-Jan-12	1200	129	129
8-Jan-12	1227	130	130
9-Jan-12	1213	117	117
10-Jan-12	1213	163	163
11-Jan-12	1208	134	134
12-Jan-12	1225	122	122
13-Jan-12	1200	156	156
14-Jan-12	1200	119	119
15-Jan-12	1183	106	106
16-Jan-12	1197	127	127
17-Jan-12	1221	99	99
18-Jan-12	1210	158	158
19-Jan-12	1208	222	222
20-Jan-12	1188	172	172
21-Jan-12	1225	126	126
22-Jan-12	1204	170	170
23-Jan-12	1220	146	146
24-Jan-12	1210	118	118
25-Jan-12	1200	89	89
26-Jan-12	1211	89	89
27-Jan-12	1195	98	98
28-Jan-12	1210	85	85
29-Jan-12	1203	98	98
30-Jan-12	1175	179	179
31-Jan-12	1206	117	117

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Cavity 2061

Jan-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1205	137	137

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
8-Jan-12	1227	130

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
30-Jan-12	1175	179

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
19-Jan-12	222	1208

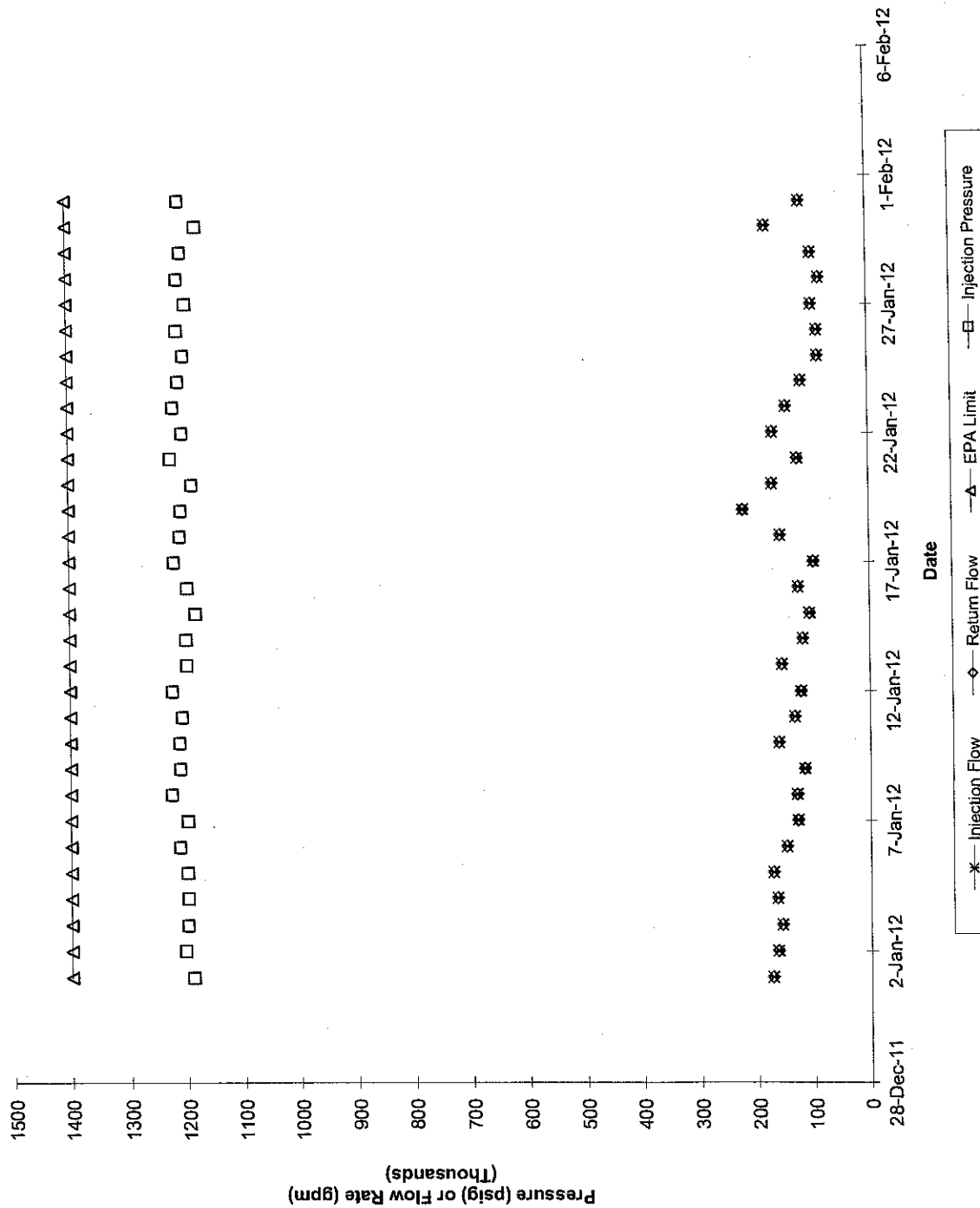
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# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



CAVITY 2062

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Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Jan-12	shut in	shut in	shut in
2-Jan-12	shut in	shut in	shut in
3-Jan-12	shut in	shut in	shut in
4-Jan-12	shut in	shut in	shut in
5-Jan-12	shut in	shut in	shut in
6-Jan-12	shut in	shut in	shut in
7-Jan-12	shut in	shut in	shut in
8-Jan-12	shut in	shut in	shut in
9-Jan-12	shut in	shut in	shut in
10-Jan-12	shut in	shut in	shut in
11-Jan-12	shut in	shut in	shut in
12-Jan-12	shut in	shut in	shut in
13-Jan-12	shut in	shut in	shut in
14-Jan-12	shut in	shut in	shut in
15-Jan-12	shut in	shut in	shut in
16-Jan-12	shut in	shut in	shut in
17-Jan-12	shut in	shut in	shut in
18-Jan-12	shut in	shut in	shut in
19-Jan-12	shut in	shut in	shut in
20-Jan-12	shut in	shut in	shut in
21-Jan-12	shut in	shut in	shut in
22-Jan-12	shut in	shut in	shut in
23-Jan-12	shut in	shut in	shut in
24-Jan-12	shut in	shut in	shut in
25-Jan-12	shut in	shut in	shut in
26-Jan-12	shut in	shut in	shut in
27-Jan-12	shut in	shut in	shut in
28-Jan-12	shut in	shut in	shut in
29-Jan-12	shut in	shut in	shut in
30-Jan-12	shut in	shut in	shut in
31-Jan-12	shut in	shut in	shut in

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Mosaic Potash Hersey LLC  
1395 135<sup>th</sup> Avenue  
Hersey, MI 49639

www.mosaicco.com  
Tel 231-832-8800

November 9, 2012

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United States Environmental Protection Agency  
Underground Injection Control  
Enforcement Unit, Region 5  
77 W. Jackson, WU - 16J  
Chicago, IL 60604

Attn: Lisa Perenchio

RE: Class III Solution Mining Wells  
Permit No. MI-133-3G-A002  
Monthly Report for October 2012

During the month of October, Mosaic Potash solution well operations were as follows:

- Cavity KCI 1010 was not in operation for this month.
- Cavity KCI 1020 was in operation for 31 days this month.
- Cavity KCI 1040 was not in operation for this month.
- Cavity KCI 1050 was in operation for 31 days this month.
- Cavity KCI 1060 was in operation for 29 days this month.
- Cavity KCI 2030 was in operation for 31 days this month.
- Cavity KCI 2040 was not in operation for this month.
- Cavity KCI 2061 was in operation for 31 days this month.
- Cavity KCI 2062 was not in operation for this month.

Workover records are sent under separate cover by Doug Patulski, Minefield Superintendent.

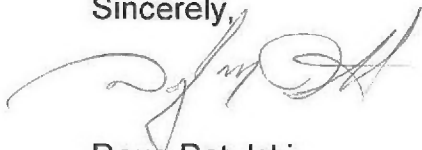


Attached are the following reports for Cavities KCI 1010, KCI 1020, KCI 1040, KCI 1050, KCI 1060, KCI 2030, KCI 2040, KCI 2061, and KCI 2062:

1. Graphs showing Injection Pressure, Injection Flowrate, and Return Flowrate.
2. Daily Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
3. Monthly Averages for Injection Pressure, Injection Flowrate, and Return Flowrate.
4. Maximum and Minimum Injection Pressure and Corresponding Flowrates.
5. Maximum Injection Flowrate and Corresponding Injection Pressure.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Sincerely,



Doug Patulski  
Minefield Superintendent



Karl Tomaszewski  
Site Manager

Attachments

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✓ CAVITY 1010

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Cavity 1010

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in
31-Oct-12	shut in	shut in	shut in

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✓ CAVITY 1020

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Cavity 1020

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	1149	322	384
2-Oct-12	1044	252	339
3-Oct-12	1044	137	219
4-Oct-12	1052	75	107
5-Oct-12	1075	73	100
6-Oct-12	1013	76	104
7-Oct-12	1035	81	105
8-Oct-12	1075	92	111
9-Oct-12	1069	107	115
10-Oct-12	1075	88	122
11-Oct-12	1087	86	111
12-Oct-12	1111	87	163
13-Oct-12	1096	89	69
14-Oct-12	1086	92	127
15-Oct-12	1076	92	122
16-Oct-12	1077	89	120
17-Oct-12	1102	100	133
18-Oct-12	1075	102	122
19-Oct-12	1081	100	116
20-Oct-12	1101	114	122
21-Oct-12	1108	100	132
22-Oct-12	1095	97	124
23-Oct-12	1101	95	120
24-Oct-12	1098	99	129
25-Oct-12	1114	92	95
26-Oct-12	1129	93	108
27-Oct-12	1125	99	127
28-Oct-12	1123	115	124
29-Oct-12	1092	110	168
30-Oct-12	1083	133	164
31-Oct-12	1074	144	187

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Cavity 1020

✓ Oct-12  
Monthly Averages

Injection Pressure (psi)  
1086

Injection Flow (gpm)  
111

Return Flow (gpm)  
142

✓ Maximum Injection Pressure and corresponding Injection Flow

Date  
1-Oct-12

Injection Pressure (psi)  
✓ 1149

Injection Flow (gpm)  
322

Minimum Injection Pressure and corresponding Injection Flow

Date  
6-Oct-12

Injection Pressure (psi)  
1013

Injection Flow (gpm)  
76

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
1-Oct-12

Injection Flow (gpm)  
✓ 322

Injection Pressure (psi)  
1149

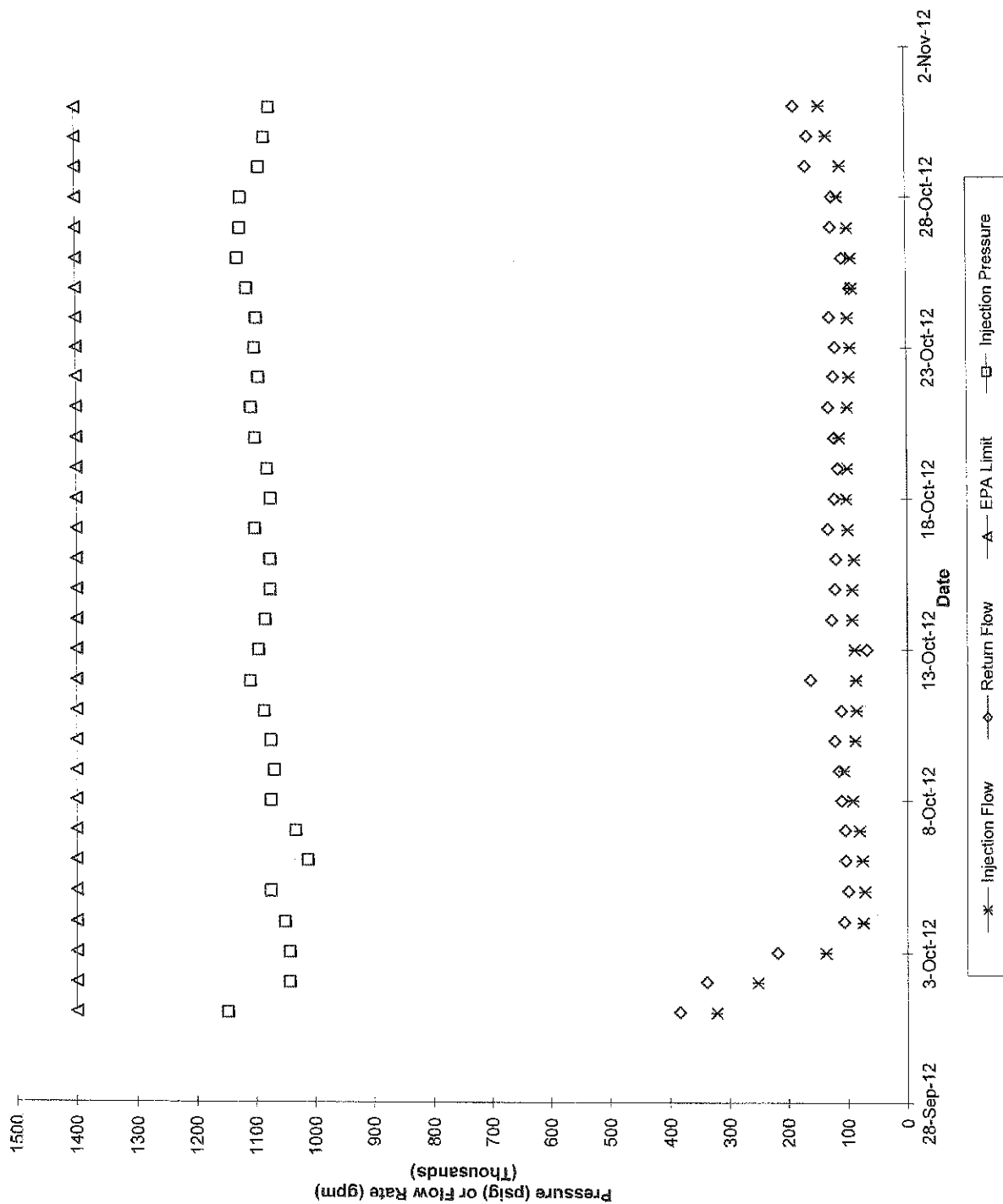
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# Solution Mining Permit MI-133-3G-A002

Cavity 1020 Pressures & Flow Rates



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Cavity 1040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in
31-Oct-12	shut in	shut in	shut in

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✓ CAVITY 1050

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Cavity 1050

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	1177	166	166
2-Oct-12	1170	169	169
3-Oct-12	1170	166	166
4-Oct-12	1113	173	173
5-Oct-12	1153	163	163
6-Oct-12	1215	173	173
7-Oct-12	1188	157	157
8-Oct-12	1183	163	163
9-Oct-12	1205	165	165
10-Oct-12	1173	156	156
11-Oct-12	1195	169	169
12-Oct-12	1200	182	182
13-Oct-12	1158	180	180
14-Oct-12	1183	175	175
15-Oct-12	1175	161	161
16-Oct-12	1195	154	154
17-Oct-12	1138	170	170
18-Oct-12	1117	177	177
19-Oct-12	1165	157	157
20-Oct-12	1120	175	175
21-Oct-12	1140	172	172
22-Oct-12	1160	158	158
23-Oct-12	1143	154	154
24-Oct-12	1188	139	139
25-Oct-12	1180	134	134
26-Oct-12	1158	176	176
27-Oct-12	1150	173	173
28-Oct-12	1128	170	170
29-Oct-12	1145	134	134
30-Oct-12	1180	97	97
31-Oct-12	1140	144	144

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Cavity 1050

Oct-12  
Monthly Averages

Injection Pressure (psi)  
1165

Injection Flow (gpm)  
161

Return Flow (gpm)  
161

Maximum Injection Pressure and corresponding Injection Flow

Date  
6-Oct-12

Injection Pressure (psi)  
1215

Injection Flow (gpm)  
173

Minimum Injection Pressure and corresponding Injection Flow

Date  
4-Oct-12

Injection Pressure (psi)  
1113

Injection Flow (gpm)  
173

Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
12-Oct-12

Injection Flow (gpm)  
182

Injection Pressure (psi)  
1200

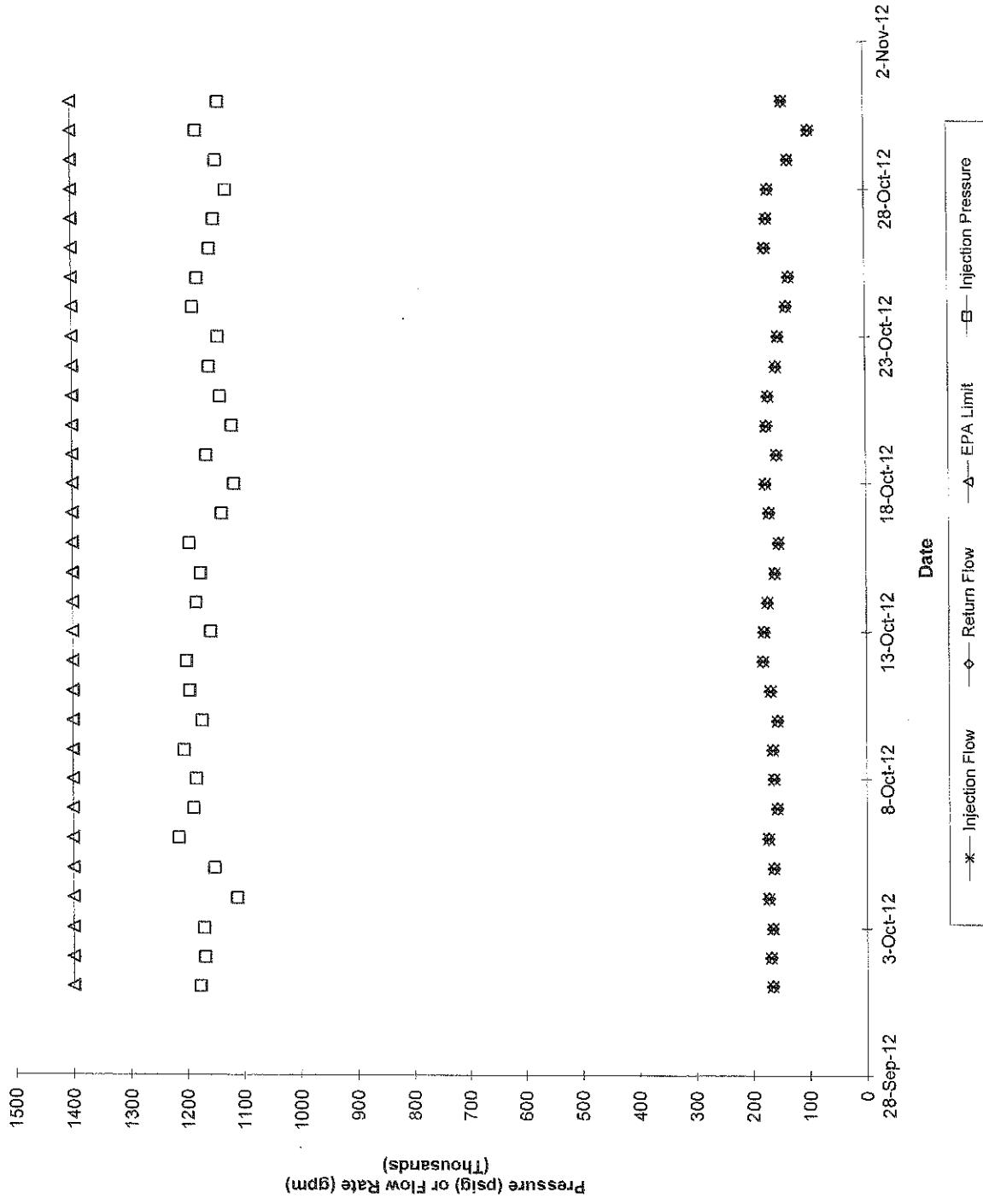
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# Solution Mining Permit MI-133-3G-A002

Cavity 1050 Pressures & Flow Rates



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Cavity 1060

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in
3-Oct-12	1044	300	237
4-Oct-12	1052	340	288
5-Oct-12	1075	313	301
6-Oct-12	1014	354	321
7-Oct-12	1035	333	320
8-Oct-12	1075	319	295
9-Oct-12	1069	292	273
10-Oct-12	1075	285	296
11-Oct-12	1087	299	279
12-Oct-12	1111	285	286
13-Oct-12	1096	278	288
14-Oct-12	1086	271	279
15-Oct-12	1076	299	284
16-Oct-12	1077	264	274
17-Oct-12	1102	271	280
18-Oct-12	1075	271	306
19-Oct-12	1081	278	238
20-Oct-12	1101	271	272
21-Oct-12	1088	278	294
22-Oct-12	1095	271	275
23-Oct-12	1101	278	272
24-Oct-12	1098	278	270
25-Oct-12	1114	236	246
26-Oct-12	1129	278	271
27-Oct-12	1125	271	269
28-Oct-12	1123	264	275
29-Oct-12	1091	257	256
30-Oct-12	1082	236	230
31-Oct-12	1074	243	269

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Cavity 1060

Oct-12  
Monthly Averages

Injection Pressure  
1085

Injection Flow  
283

Return Flow  
277

✓ Maximum Injection Pressure and corresponding Injection Flow

Date  
26-Oct-12

Injection Pressure  
✓ 1129

Injection Flow  
278

Minimum Injection Pressure and corresponding Injection Flow

Date  
6-Oct-12

Injection Pressure  
1014

Injection Flow  
354

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date  
6-Oct-12

Injection Flow  
✓ 354

Injection Pressure  
1014

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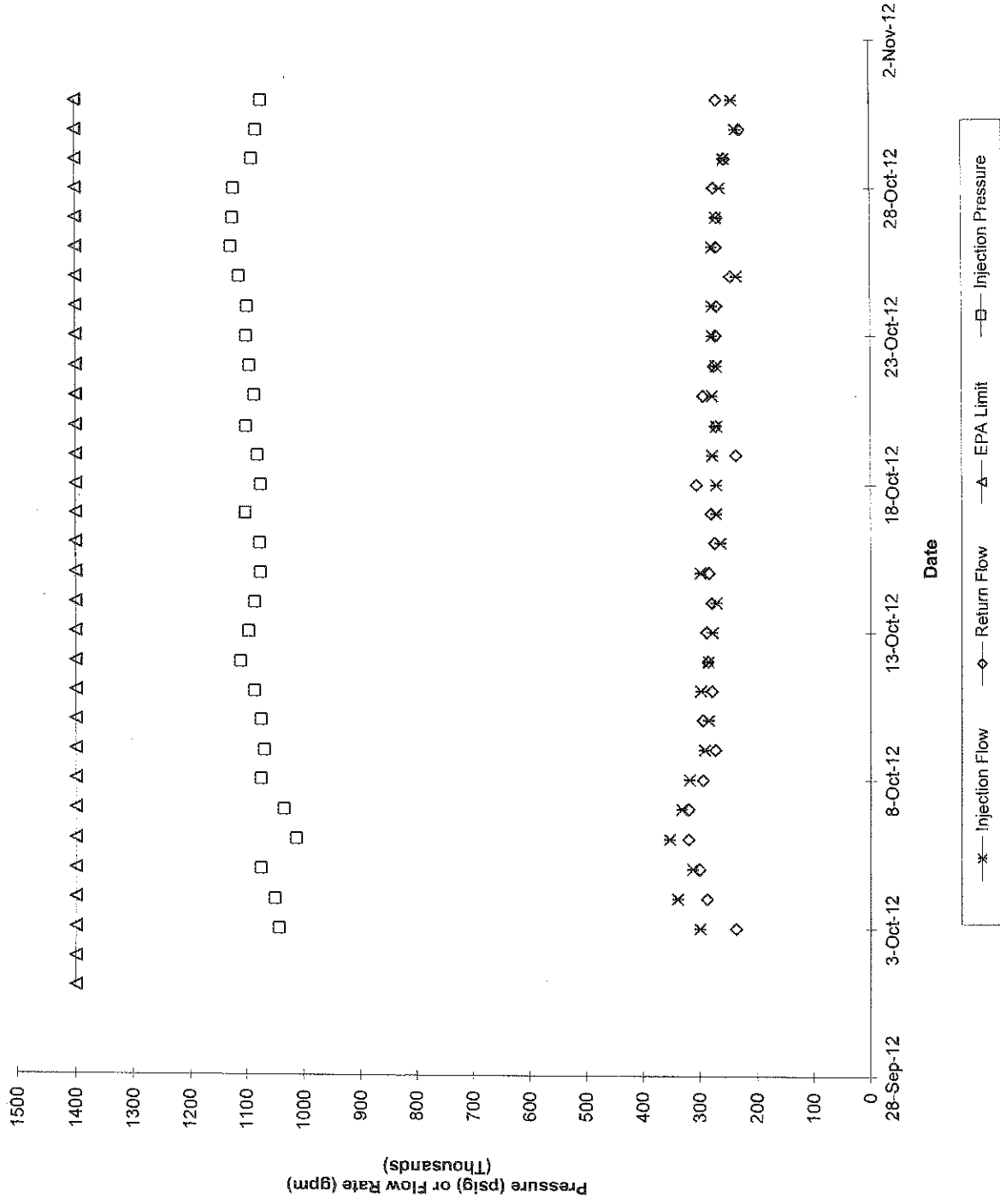
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# Solution Mining Permit MI-133-3G-A002

Cavity 1060 Pressures & Flow Rates



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Cavity 2030

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	1177	279	279
2-Oct-12	1170	277	277
3-Oct-12	1170	274	274
4-Oct-12	1113	275	275
5-Oct-12	1153	286	286
6-Oct-12	1215	283	283
7-Oct-12	1188	298	298
8-Oct-12	1183	261	261
9-Oct-12	1205	275	275
10-Oct-12	1173	266	266
11-Oct-12	1195	287	287
12-Oct-12	1200	288	288
13-Oct-12	1158	271	271
14-Oct-12	1183	270	270
15-Oct-12	1175	287	287
16-Oct-12	1195	288	288
17-Oct-12	1138	285	285
18-Oct-12	1117	283	283
19-Oct-12	1165	284	284
20-Oct-12	1120	270	270
21-Oct-12	1110	290	290
22-Oct-12	1160	283	283
23-Oct-12	1143	272	272
24-Oct-12	1188	275	275
25-Oct-12	1180	232	232
26-Oct-12	1158	250	250
27-Oct-12	1150	276	276
28-Oct-12	1128	277	277
29-Oct-12	1145	285	285
30-Oct-12	1180	282	282
31-Oct-12	1140	278	278

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Cavity 2030

Oct-12  
Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1164	277	277

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Oct-12	1215	283

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
21-Oct-12	1110	290

Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (gpm)	Injection Pressure (psi)
7-Oct-12	298	1188

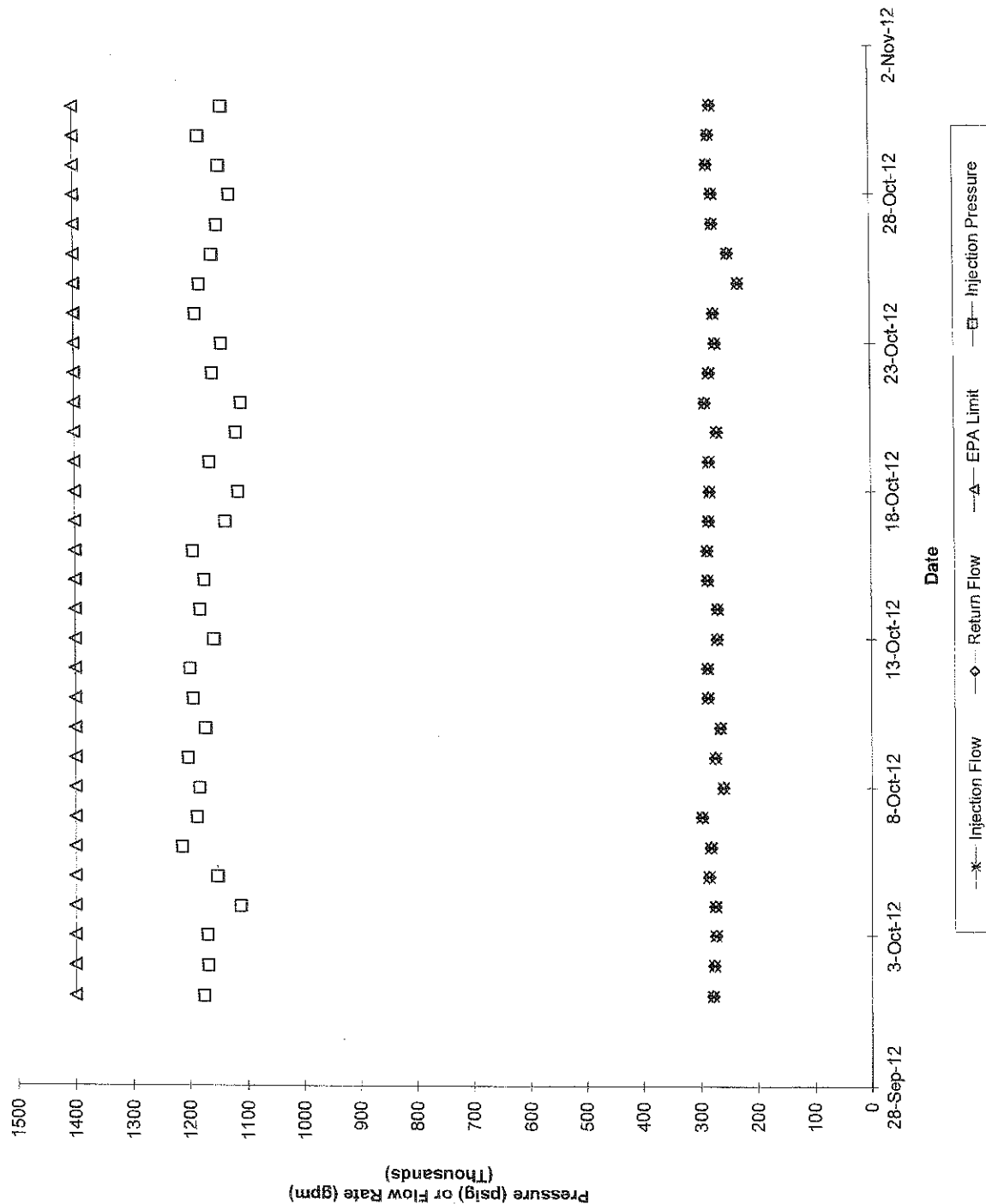
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# Solution Mining Permit MI-133-3G-A002

Cavity 2030 Pressures & Flow Rates



✓ CAVITY 2040

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Cavity 2040

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
✓ 1-Oct-12	shut in	shut in	shut in
✓ 2-Oct-12	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in
31-Oct-12	✓ shut in	✓ shut in	shut in

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✓ CAVITY 2061

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Cavity 2061

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	1177	112	112
2-Oct-12	1170	113	113
3-Oct-12	1170	89	89
4-Oct-12	1113	145	145
5-Oct-12	1153	135	135
6-Oct-12	1215	140	140
7-Oct-12	1188	123	123
8-Oct-12	1183	141	141
9-Oct-12	1205	124	124
10-Oct-12	1173	142	142
11-Oct-12	1195	117	117
12-Oct-12	1200	111	111
13-Oct-12	1158	110	110
14-Oct-12	1183	108	108
15-Oct-12	1175	105	105
16-Oct-12	1195	115	115
17-Oct-12	1138	105	105
18-Oct-12	1117	113	113
19-Oct-12	1165	129	129
20-Oct-12	1120	120	120
21-Oct-12	1110	116	116
22-Oct-12	1160	113	113
23-Oct-12	1143	108	108
24-Oct-12	1188	96	96
25-Oct-12	1180	84	84
26-Oct-12	1158	112	112
27-Oct-12	1150	113	113
28-Oct-12	1128	92	92
29-Oct-12	1145	103	103
30-Oct-12	1180	115	115
31-Oct-12	1140	108	108

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Cavity 2061

✓ Oct-12  
✓ Monthly Averages

Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1164	115	115

Maximum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
6-Oct-12	1215	140

Minimum Injection Pressure and corresponding Injection Flow

Date	Injection Pressure (psi)	Injection Flow (gpm)
21-Oct-12	1110	116

✓ Maximum Injection Flow Rate and corresponding Injection Pressure

Date	Injection Flow (psi)	Injection Pressure (psi)
4-Oct-12	✓ 145	1113

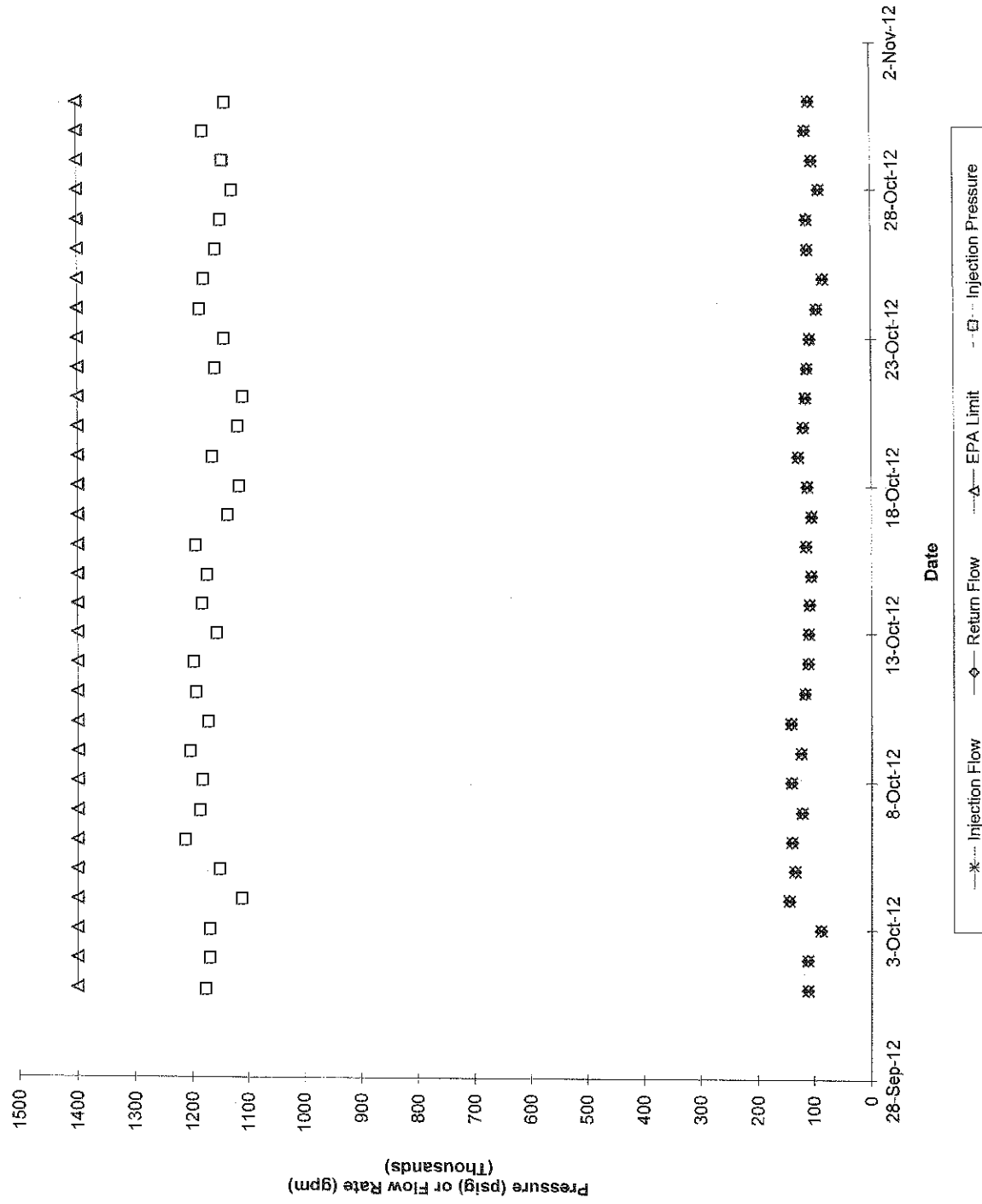
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# Solution Mining Permit MI-133-3G-A002

Cavity 2061 Pressures & Flow Rates



CAVITY 2062

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Cavity 2062

Daily Averages

Date	Injection Pressure (psi)	Injection Flow (gpm)	Return Flow (gpm)
1-Oct-12	shut in	shut in	shut in
2-Oct-12	shut in	shut in	shut in
3-Oct-12	shut in	shut in	shut in
4-Oct-12	shut in	shut in	shut in
5-Oct-12	shut in	shut in	shut in
6-Oct-12	shut in	shut in	shut in
7-Oct-12	shut in	shut in	shut in
8-Oct-12	shut in	shut in	shut in
9-Oct-12	shut in	shut in	shut in
10-Oct-12	shut in	shut in	shut in
11-Oct-12	shut in	shut in	shut in
12-Oct-12	shut in	shut in	shut in
13-Oct-12	shut in	shut in	shut in
14-Oct-12	shut in	shut in	shut in
15-Oct-12	shut in	shut in	shut in
16-Oct-12	shut in	shut in	shut in
17-Oct-12	shut in	shut in	shut in
18-Oct-12	shut in	shut in	shut in
19-Oct-12	shut in	shut in	shut in
20-Oct-12	shut in	shut in	shut in
21-Oct-12	shut in	shut in	shut in
22-Oct-12	shut in	shut in	shut in
23-Oct-12	shut in	shut in	shut in
24-Oct-12	shut in	shut in	shut in
25-Oct-12	shut in	shut in	shut in
26-Oct-12	shut in	shut in	shut in
27-Oct-12	shut in	shut in	shut in
28-Oct-12	shut in	shut in	shut in
29-Oct-12	shut in	shut in	shut in
30-Oct-12	shut in	shut in	shut in
31-Oct-12	shut in	shut in	shut in

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